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Recreational Boating Activity Trends in California 1995 - 2020

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Recreational Boating Activity Trends In California 1995 - 2020

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Abstract

This study presents empirical evidence strongly suggesting that recreational boat owners in California use their boats in different counties from where they are registered, and that boating activity will grow more slowly in future years due to potential overcrowding on waterways and at boating facilities. Both findings have important air quality management implications. Typically, boat owners register their boats where they live, and most boat owners live in highly populated urban counties. However, evidence is presented that suggests boat owners tend to use their boats in less populated counties. Boat registration is projected to rise substantially in California over the next 25 years. Evidence is presented to suggest that the boating activity accompanying this registration growth will continue to take place in less populated counties. Since neither the waterways nor the facilities used by recreational boat owners are likely to grow as much, this is likely to produce overcrowding on waterways and at boating facilities. This study presents strong empirical evidence suggesting that boat owners will respond to overcrowding by reducing their boating activity. For instance, boat owners surveyed for this study responded that they would reduce their boating activity an average of 31.35% if the waterways they had used in 1996 were twice as crowded. Further, forecasts presented in this study estimate that boating activity could grow by as little as 16% over the next twenty-five years in light of the increase in overcrowding at existing waterways and boating facilities. This contrasts with forecasts of around 80% growth in statewide boat registration.

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Section 1. Introduction

California enjoys the highest level of recreational boating activity in the nation. In 1995, 860,672 recreational boats were registered[1], and each boat was used an average of 26.9 days during the year[2]. The high level of recreational boating activity generated by all these boats poses a serious potential threat to the state's air quality. Each day, tens of thousands of recreational boats ply the state's waters powered by engines with considerably lower emissions standards than those for automobiles.

Boating Registration Is Projected To Rise Dramatically

Recreational boat registration has more than doubled over the last twenty five years[3], and the level of recreational boating activity has likely doubled as well. Past studies have identified a strong relationship between the levels of boat registration, population, and per-capita income[4]. Over the next few decades, as the state's population and per-capita income continue to grow, there is every expectation that boat registration and recreational boating activity will continue to rise accordingly. For instance, one study forecasts that statewide boat registration will increase by 70% between 1995 and 2010, due to population and income growth. The implications of this increase in boat registration and recreational boating activity in terms of air quality management are potentially alarming.

Two Important Questions Emerge In Interpreting the Impact of Growth on Air Quality

Statewide forecasts of continuing growth in boat registrations over the next few decades and the air quality implications of this must be considered in light of two important related questions. First, to what extent does the projected increase in boat registration and boating activity have an impact on counties that are already suffering from air quality problems? Second, to what extent will the projected increase in boat registration and boating activity lead to overcrowded conditions at existing waterways and boating facilities[5], causing some boat owners to reduce their boating activity as a result of this overcrowding? This study is aimed at addressing these two issues.

1. Which Counties Will Be Most Affected By the Growth In Boating Activity?

Regarding the locational impact of the projected growth in recreational boating activity, it is important to note that recreational boat owners typically register their boats at their home address, but in many cases actually use their boats elsewhere. Unlike drivers, who typically use automobiles close to home, boat owners often haul their boats to, or moor their boats at other locations. This distinction between where boats are registered and where they are used has significant air quality implications. For instance, if boats are used close to where they are registered, then highly urbanized, metropolitan counties (already beset with serious air quality problems) would suffer still more from a growth in recreational boat emissions. If, on the other hand, boats are used away from where they are registered, in outlying, less populated, non-urban counties (with relatively fewer air quality problems), the potential threat to the state's overall air quality would not be as great.

The first primary objective of this study is to determine the extent to which boats are registered in different counties than where they are actually used. Specifically, it will provide

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[1] According to California Department of Motor Vehicle (DMV) records.

[2] According to information from a survey conducted exclusively for this report and described extensively in Section 3.

[3] In 1970, 415,196 boats were registered according to DMV records.

[4] See *Statewide Boating Facilities and Demand Study*, a 1995 report for the California Department of Boating and Waterways by the Public Research Institute.

[5] Marina slips, boat ramps, boat hoists, etc.

empirically derived estimates for the extent to which boats registered in the most populated counties are actually used in less populated counties.

2. *Will Overcrowding Act to Reduce the Projected Growth In Boating Activity?*
Regarding the effects of physical overcrowding on boating activity, it is important to note that while boating registration and boating activity will grow substantially, the number of waterways and boating facilities in the state will grow at a much smaller rate. There is a finite number of waterways suitable for recreational boating, and while some new facilities can be constructed on existing waterways, the ability to do so is limited physically. Thus, growth will lead to more boats on the average waterway and more boats using the average facility. The extent to which boat owners would curtail some of their boating activities due to this overcrowding is unknown. Potentially, this factor could have a large (negative) effect on boating registration and boating activity projections, so more accurate projections should be qualified to take this account into effect.

The second primary objective of this study is to determine the extent to which overcrowded conditions could limit projected increases in recreational boating activity. Specifically, it will provide empirically derived estimates of future recreational boating activity by county while taking boat owner's responses to future overcrowding into account.

Section 2. Methodology

This study combines information from several sources to project boating activity levels for each county into the future. A key source of information used in the study was the 1996 survey of 1048 registered boat owners conducted for this study by the Public Research Institute (PRI). The survey itself, its methodology, and sampling framework are described extensively in Section 3, and a copy of the questionnaire used in the survey appears in Appendix A. Survey information was utilized throughout the analysis and projections provided in this report. Registered boat owners in each California county were asked where and how often they used their boats in each specific county. In addition, registered boat owners were asked how often they would use their boats in these specific counties if the waterways there were overcrowded, and if the boating facilities there were overcrowded.

The study offers an improvement over previous studies in that its projections are measured in terms of recreational boating activity days for each county as opposed to the number of boats registered in each county. The term "boating activity days" refers to the number of days boats are actually in use during a year. For example, if 10 boats are in use an average of 15 days each per year, there would be 150 boating activity days. Since the survey asked registered boat owners in each county how many days they used their boats in each county their boat was used during 1996, it was possible to construct a boating activity day matrix from the survey information. The 1996 Boating Activity Day Matrix appears in Appendix B.

The 1996 Boating Activity Day Matrix is an important tool for transforming boating registration data for each county into estimates of boating activity days for each county. It provides the average number of days survey respondents in each county used their boat in each county where their boats were used, including the home county. Assuming survey respondents were representative of boat owners in general, multiplying each entry in the activity day matrix by the total number of boats registered for that county will yield an estimate of the total number of boating activity days for that county. For instance, suppose the boating activity day matrix indicated that survey respondents from County A used their boats an average of 5 days each in County B. If Department of Motor Vehicle (DMV) records indicate there were a total of 2,000 registered boats in County A, this would indicate a total of 10,000 boating activity days in County B generated by boat owners from County A (5 days each x 2,000 boats). Calculations using this method were made for all 58 California counties. In order to obtain the total number of boating activity days occurring within a particular county, it was necessary to then sum up the activity days generated by boat owners from each county. To continue with the example above, recall that County B had 10,000 boating activity days generated from boat owners from County A. Suppose that similar calculations indicated that County B had 8,000 boating activity days generated by its own registered boat owners, and an additional 2,000 boating activity days by boat owners from County C. If no other boat owners used their boats in County B, this would suggest that County B had a total of 20,000 boating activity days in 1996 (10,000 + 8,000 + 2,000).

The method described above resulted in estimates for the total number of boating activity days for each county in 1996. These estimates of boating activity days by county were then compared to boat registration by county to determine the extent to which boat owners living in large, highly populated counties actually used their boats in smaller non-urban counties. These estimates and the subsequent analysis of them appear in Section 4 . of this report.

Forecasting boat registrations into the future is a fairly straight-forward procedure because the DMV has registration data by county for each year between 1972 and 1995. Forecasting methods

require a consistent time series[6] of past values for both the dependent variable to be forecasted and the independent variables used to make the forecast. Given this requirement, it is not possible to *directly* forecast boating activity days since there were no past measures of boating activity days other than those obtained in the study for 1996. Therefore, for this study, boating activity days were *indirectly* forecast in a two stage process. In the first stage, boat registration projections for each county were forecast. In the second stage, the boating activity day matrix described above was used to transform the boat registration projections into boating activity day projections. The method used for this transformation was identical to that described above for transforming 1995 boat registrations into 1995 boating activity days.

Boating registration forecasts for each county were estimated using the following method. Data from the California Department of Motor Vehicles (DMV) was available for each California county from 1981 through 1996. Past studies[7] have successfully forecast boat registration as a function of population and income levels. Therefore, for this study, similar boat registration forecasts were estimated using the following multiple regression function:

Registration = f(Population, Personal Income)

Where Registration is the number of boats registered according to DMV records, Population is the total number of persons in the county, and Real Personal Income is the total level of personal income for the county. The functional form of the equation is based on a very simple demand model for boating activity: As the population grows, so does the number of persons wanting to own and use boats, so registrations rise. In addition, as personal income grows, county residents are richer and devote more attention to leisure activities, including boating, so registrations rise. Registration data came from DMV records. Population and personal income data came from the California Department of Finance. A complete list of data sources used in the multiple regression analysis appears in Appendix D.

Historical data for years 1972 through 1994 were used to estimate the regression parameters of the functional equation shown above for each county. The regression coefficient estimates for each county were then used to forecast future boat registration levels for each county for the years 2000, 2005, 2010, 2015, and 2020. Projected future levels of Population came from the Department of Finance estimates. Projected levels of Personal Income were obtained from a separate simple regression analysis conducted for the study which used the time trend of personal income between 1981 and 1995 to forecast the future levels of personal income. Projected values for the independent variables were plugged into the regression equations for each county for each of the five out years (2000 through 2020), and the estimated boat registration projections were recorded.

Next, straight-line boating activity day forecasts[8] were estimated for each county in each of the out years between 2000 and 2020. Boat registration projections for each county for each of these years were multiplied by the entries in the 1996 Boating Activity Day Matrix for every county. This yielded a projected number of boating activity days for each county derived from the projected number of registered boats from each county. It is important to note that combining the 1996 Boating Activity Day Matrix with boat registration projections for future years implicitly assumes that in future years, boat owners will continue to use their boats in the same counties and for the same average number of days as they did in 1996. Finally, to obtain total boating activity day projections for each county, the sum of the boating activity days from

[6] For statistically reliable forecasts, it is necessary to have data from at least ten years for each variable.

[7] See *Statewide Boating Facilities and Demand Study.*

[8] Straight-line forecasts are those that do not take boat owner responses to overcrowding into account.

registered boat owners from every county was calculated. This procedure is identical to that described above for estimating the 1995 level of boating activity days for each county. The Straight Line Boating Activity Day forecasts for out years between 2000 and 2020 appear in Section 5. of this report.

Next, revised boating activity day forecasts[9] were also estimated for each county in each of the out years between 2000 and 2020. Revised estimates were made separately for each of the two overcrowding conditions: overcrowding of waterways, and overcrowding of boating facilities. In the survey, boat owners were asked how many days they would have used their boats in each county if waterways there were *twice* as crowded as they actually were in 1996. Additionally, they were asked how many days they would have used their boats in each county if boating facilities there were *twice* as crowded. The Overcrowded Waterways Boating Activity Day Matrix and the separate Overcrowded Facilities Boating Activity Day Matrix appear as Appendix C. and Appendix D. of this report.

From each of the two overcrowded boating activity day matrixes it was possible to calculate the percentage reduction in boating activity days in each county from the 1995 baseline first when the waterways, and then the facilities experienced a 100% increase in boating activity ("twice as crowded"). From the straight-line boating activity forecasts, it was possible to calculate the percentage increase in boating activity without accounting for these overcrowding effects. In order to make the revised boating activity forecasts for overcrowding, these two percentages were multiplied together and the straight-line projections were revised downward by that factor. The formula used in this revision was the following:

$$RP_t = \left[1 - \left(a \times b_t\right)\right] \times SP_t$$

Where:
- RP_t = Revised Projection in boating activity for year t.
- a = 1995 percentage reduction in boating activity due to overcrowding.
- b_t = Projected percentage increase in boating activity from 1995 to year t.
- SP_t = Straight-line Projection for year t.

For example, suppose that a = 50%. This indicates that residents of this county responded that they would reduce their boating activity by 50% if boating activity doubled in the county. If in reality, boating activity was only projected to increase by 30% from 1995 to this year (b_t = 30%), then the revised reduction in boating activity would be only 15% (50% x 30%) instead of 50%. Therefore, RP_t should be 85% (1 - .15) of the original straight-line projection Sp_t.

Revised boating activity forecasts were estimated for each county in each of the out years between 2000 and 2020 for both overcrowding on waterways, and overcrowding at boating facilities. These projections appear in Section 5. of this report. Some important implicit assumptions were made in making these projections. First, it is assumed that there will be no increase in either waterways or boating facilities over this period. While there probably will be only limited increases in the number of waterways open to recreational use over this period, there is likely to be significant increases in the number of boating facilities.[10] Second, the analysis implicitly assumes that when boat owners reduce their boating activity in one county due to overcrowding, they do not increase their boating activity in other counties as a result. In other words, this analysis does not account for the likely shifting in the location of boat usage that will undoubtedly occur when boat owners move from more crowded to less crowded counties.

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[9] Revised forecasts are those that do take boat owner's response to overcrowded conditions into account.

[10] Again, see *Statewide Boating Facilities and Demand Study.*

3. The Survey

In July and August, 1996, the Public Research Institute (PRI) conducted a survey of registered boat owners throughout the state, asking them how many days they went boating in every county where they went boating during 1996. The survey also asked boat owners how many days they would have gone boating in these counties if the waterways there were twice as crowded, and if the facilities there were twice as crowded. A copy of the survey questionnaire appears in Appendix A.

All survey respondents for this survey had also positively responded to an earlier survey of registered boat owners conducted by PRI in 1995 for the California Department of Boating and Waterways. The present survey for this report was a follow-up to that earlier survey. This resulted in a much higher response rate in the second survey, as those who participated in the earlier survey were much more likely to participate in the second survey. In the earlier survey, registered boat owners were selected at random from DMV boating registration records. Telephone numbers were obtained for each address from an independent sub-contractor specializing in this. Respondents were contacted by telephone during evenings and weekends by a trained team of interviewers specifically trained for conducting this survey. Quality control supervision was conducted during all of the interview periods. Each interview took approximately ten minutes to complete.

In the original survey, 2025 boat owners out of 4000 responded for a response rate of just over 50%. In the survey for this study, 1048 boat owners responded out of 1277 contacted for a response rate of 82%.

For this study, it was particularly important for the sample of survey respondents to be representative of all California boat owners in terms of their county of residence. Table 3.1 compares the percentage of survey respondents from each county with the percentage of registered boat owners from each county. It indicates that the survey respondents were a very good match with registered boat owners in general in terms of geographical distribution among California counties. In only 4 cases (Los Angeles, San Bernardino, San Diego, and Santa Clara), was there more than a one percent difference between survey respondents as a proportion of the total survey sample, and county registered boat owners as a proportion of total California registered boat owners. In no cases was this difference greater than two percent.

For some counties with a relatively small proportion of registered boat owners, there were relatively few survey respondents. In 18 cases, there were fewer than five survey respondents. Each of these counties, however, had fewer than 4,500 total registered boat owners in total (4,500 is less than six one-thousandths of the 860,672 total registered boat owners in the state). In five cases (Alpine, Colusa, Inyo, Modoc, and Sierra), no boat owner registered in the county responded to the survey. Each of these five counties, however, had fewer than 1,250 total registered boat owners (1,250 is less than two one-thousandths of the 860,672 total registered boat owners in the state).

The best summaries of the survey results are the three boating activity day matrixes shown in Appendix B., C., and D. of this report. In the 1996 Boating Activity Day Matrix, each entry shows the average number of boating days boat owners registered in a county used their boats in every county. The county listed in each row indicates the county of registration, and the county listed in each column indicates the county of use. For example, looking at the first page in the table, the entry for Contra Costa/Alameda indicates that boat owners registered in Contra Costa County (the row county of registration) used their boats an average of 3.87 activity days in Alameda County (the column county of use).

A dash indicates that no boat owners registered in a county used their boats in the county in question. The Overcrowded Waterways Boating Activity Day Matrix and the Overcrowded Facilities Boating Activity Day Matrix which follow can be interpreted in the same way. For instance, each entry in the Overcrowded Waterways Boating Activity Day Matrix shows the average number of boating days boat owners in the survey from a particular county estimated they would have use their boats in each county if there had been twice as many boats on the water.

Table 3.1 Number and Percent of Survey Respondents By County Compared With Number and Percent of All Registered Boat Owners

County	*Survey Respondents*	*Percent of Survey Respondents*	*Registered Boat Owners*	*Percent of Registered Boat Owners*
Alameda	35	3.34%	31,445	3.65%
Alpine	0	0.00%	94	0.01%
Amador	3	0.29%	2,585	0.30%
Butte	19	1.81%	14,396	1.67%
Calaveras	2	0.19%	4,345	0.50%
Colusa	0	0.00%	1,240	0.14%
Contra Costa	38	3.63%	38,876	4.52%
Del Norte	1	0.10%	1,592	0.18%
El Dorado	17	1.62%	12,172	1.41%
Fresno	26	2.48%	20,424	2.37%
Glenn	3	0.29%	1,744	0.20%
Humbolt	6	0.57%	7,218	0.84%
Imperial	5	0.48%	2,541	0.30%
Inyo	0	0.00%	1,126	0.13%
Kern	17	1.62%	14,518	1.69%
Kings	2	0.19%	2,356	0.27%
Lake	10	0.95%	10,244	1.19%
Lassen	4	0.38%	2,893	0.34%
Los Angeles	169	16.13%	122,743	14.26%
Madera	5	0.48%	5,012	0.58%
Marin	19	1.81%	10,371	1.20%
Mariposa	1	0.10%	1,218	0.14%
Mendocino	8	0.76%	4,891	0.57%
Merced	11	1.05%	5,726	0.67%
Modoc	0	0.00%	713	0.08%
Mono	2	0.19%	1,566	0.18%
Monterey	11	1.05%	8,265	0.96%
Napa	14	1.34%	6,950	0.81%
Nevada	12	1.15%	8,300	0.96%
Orange	85	8.11%	72,885	8.47%
Placer	20	1.91%	16,521	1.92%
Plumas	2	0.19%	3,447	0.40%
Riverside	40	3.82%	38,077	4.42%

Table 3.1 Continued.

County	*Survey Respondents*	*Percent of Survey Respondents*	*Registered Boat Owners*	*Percent of Registered Boat Owners*
Sacramento	62	5.92%	43,473	5.05%
San Benito	2	0.19%	1,360	0.16%
San Bernardino	40	3.82%	43,161	5.01%
San Diego	56	5.34%	59,628	6.93%
San Francisco	4	0.38%	4,438	0.52%
San Joaquin	18	1.72%	23,216	2.70%
San Luis Obispo	13	1.24%	10,699	1.24%
San Mateo	28	2.67%	14,889	1.73%
Santa Barbara	14	1.34%	9,761	1.13%
Santa Clara	55	5.25%	33,176	3.85%
Santa Cruz	9	0.86%	7,595	0.88%
Shasta	16	1.53%	16,782	1.95%
Sierra	0	0.00%	368	0.04%
Siskiyou	6	0.57%	3,677	0.43%
Solano	17	1.62%	14,369	1.67%
Sonoma	24	2.29%	19,419	2.26%
Stanislaus	18	1.72%	17,045	1.98%
Sutter	11	1.05%	4,966	0.58%
Tehama	5	0.48%	3,905	0.45%
Trinity	2	0.19%	1,963	0.23%
Tulare	10	0.95%	8,648	1.00%
Tuolumne	6	0.57%	5,367	0.62%
Ventura	34	3.24%	24,233	2.82%
Yolo	9	0.86%	5,733	0.67%
Yuba	1	0.10%	3,672	0.43%
California Totals	*1047*		*860,672*	

4. Activity Day Use In 1995

The first primary objectives of this study is to determine the extent to which boats are registered in different counties than where they are actually used. In this section, we provide empirical estimates of the total number of boating activity days in 1995 for each county. These estimates were derived from the 1996 Boating Activity Day Matrix and the DMV records for boat registration by county as described in the methodology section above. We also make a comparison between county boat registration and boating activity day use to gauge the extent to which boats registered in the most populated counties are actually used in less populated counties.

Table 4.1 compares boat registration by county with the boating activity day estimates generated from the 1996 Boating Activity Day Matrix. Meaningful comparisons require measuring in the same units. Since the survey data is measured in terms of boating activity days, and the boat registration is measured in terms of number of boats registered, we needed some kind of transformation to make a meaningful comparison. We chose to transform the boat registration measure into an estimated boating activity day measure that would *not* reflect the fact boats registered in a county are actually used in other counties. This artificial measure could then be compared to the boating activity day measure from the survey results that did reflect that boats registered in a county are used in other counties.

Table 4.1 Comparing 1995 Boat Registration By County To Boating Activity Days By County

County	*Total Registered Boats*	*Estimated Activity Days If Boats Only Used In County of Registration*	*Estimated Activity Days From Survey*	*Difference In Estimated Activity Days*
Alameda	31,445	640,580	581,667	-58,913
Alpine	94	-	11,102	11,102
Amador	2,585	34,467	194,007	159,540
Butte	14,396	418,242	434,929	16,687
Calaveras	4,345	32,588	138,932	106,345
Colusa	1,240	-	21,449	21,449
Contra Costa	38,876	1,764,766	922,494	-842,272
Del Norte	1,592	143,280	120,015	-23,265
El Dorado	12,172	259,192	356,474	97,282
Fresno	20,424	452,470	606,357	153,887
Glenn	1,744	69,760	51,963	-17,797
Humbolt	7,218	147,969	191,348	43,379
Imperial	2,541	43,197	116,303	73,106
Inyo	1,126	-	65,500	65,500
Kern	14,518	142,618	197,897	55,279
Kings	2,356	40,052	11,780	-28,272
Lake	10,244	165,953	513,864	347,912
Lassen	2,893	167,071	218,267	51,196
Los Angeles	122,743	3,292,999	2,608,864	-684,135
Madera	5,012	193,463	194,297	834
Marin	10,371	461,237	366,155	-95,082

Table 4.1 (Continued)

County	*Total Registered Boats*	*Estimated Activity Days If Boats Only Used In County of Registration*	*Estimated Activity Days From Survey*	*Difference In Estimated Activity Days*
Mariposa	1,218	2,436	122,338	119,902
Mendocino	4,891	55,024	178,255	123,232
Merced	5,726	96,301	202,885	106,585
Modoc	713	-	5,314	5,314
Mono	1,566	63,423	110,709	47,286
Monterey	8,265	175,068	145,093	-29,975
Napa	6,950	111,200	120,652	9,452
Nevada	8,300	100,983	157,192	56,208
Orange	72,885	2,045,925	1,716,924	-329,001
Placer	16,521	337,028	333,306	-3,722
Plumas	3,447	8,618	194,099	185,481
Riverside	38,077	808,184	921,011	112,826
Sacramento	43,473	1,041,950	1,280,271	238,321
San Benito	1,360	48,960	6,070	-42,890
San Bernardino	43,161	935,515	1,121,541	186,026
San Diego	59,628	1,888,930	2,156,381	267,451
San Francisco	4,438	168,644	426,116	257,472
San Joaquin	23,216	612,644	990,489	377,844
San Luis Obispo	10,699	112,751	239,263	126,512
San Mateo	14,889	400,408	172,828	-227,579
Santa Barbara	9,761	100,399	98,096	-2,303
Santa Clara	33,176	696,696	132,765	-563,931
Santa Cruz	7,595	233,757	154,399	-79,358
Shasta	16,782	506,607	698,036	191,429
Sierra	368	-	25,361	25,361
Siskiyou	3,677	61,283	56,760	-4,523
Solano	14,369	589,129	607,415	18,286
Sonoma	19,419	543,732	230,274	-313,458
Stanislaus	17,045	331,431	171,041	-160,390
Sutter	4,966	215,344	104,941	-110,403
Tehama	3,905	104,654	36,610	-68,044
Trinity	1,963	13,741	109,752	96,011
Tulare	8,648	366,675	322,794	-43,881
Tuolumne	5,367	357,800	164,112	-193,688
Ventura	24,233	1,183,853	1,100,557	-83,296
Yolo	5,733	198,107	472,315	274,208
Yuba	3,672	176,256	153,729	-22,527
California Total	*860,672*	*23,163,356*	*23,163,356*	*0*

The first column in Table 4.1 shows the actual 1995 boat registration by county. The second column shows the estimated number of boating activity days for each county if all boats registered in that county were only used in that county, and if no other boats from any other county were used in that county. This estimate was arrived at by using the average number of total boating activity days from all boats registered in each county, regardless of where the activity took place. This average boating activity days for all boats registered in the county was then multiplied by the total number of boats registered in the county to arrive at the estimate in the second column. The third column of Table 4.1 shows the estimated number of boating activity days for each county as derived from the 1996 Boating Activity Day Matrix described in the last section. This estimate takes into account that boats registered in each county were actually used in other counties. Finally, the fourth column shows the difference between the two estimates. When the difference is negative, it implies that the county had less actual boating activity than simply looking at its total number of registered boats would indicate. A negative difference implies that boats registered in a county are used more often in other counties that boats registered in other counties are used in the county in question.

Table 4.2 Comparing 1995 Boating Activity Day Estimates For Fifteen Largest Counties

County	*Population*	*Estimated Activity Days If Boats Only Used In County of Registration*	*Estimated Activity Days From Survey*	*Difference In Estimated Activity Days*
Los Angeles	9,327,300	3,292,999	2,608,864	-684,135
San Diego	2,658,600	1,888,930	2,156,381	267,451
Orange	2,597,200	2,045,925	1,716,924	-329,001
Santa Clara	1,594,800	696,696	132,765	-563,931
San Bernardino	1,572,700	935,515	1,121,541	186,026
Riverside	1,355,600	808,184	921,011	112,826
Alameda	1,344,200	640,580	581,667	-58,913
Sacramento	1,115,100	1,041,950	1,280,271	238,321
Contra Costa	863,300	1,764,766	922,494	-842,272
San Francisco	751,900	168,644	426,116	257,472
Fresno	746,500	452,470	606,357	153,887
Ventura	709,100	1,183,853	1,100,557	-83,296
San Mateo	685,400	400,408	172,828	-227,579

Table 4.2 shows the same comparison between estimated activity days as in Table 4.1, but for the fifteen largest counties in terms of population. This allows us to analyze whether boat owners in highly populated urban counties tend to use their boats in less populated counties. Table 4.2 indicates that this generally is the case. For instance, Los Angeles, the state's largest county, also has the largest difference between the two activity day estimates. This indicates that if Los Angeles boat owners only used their boats in Los Angeles County instead of in other counties, they would generate 684,135 more boating activity days than they actually did (or 26% more).

For the five largest counties, the counties of Los Angeles, Orange, and Santa Clara all had sizable negative differences, whereas San Diego and San Bernardino counties had sizable positive differences. The average difference in these activity day estimates for the five

largest counties was - 224,718. In other words, if boat owners in the five largest counties only used their boats in their own counties instead of in other counties (and if no one else used boats in their counties), they would generate 224,718 more boating activity days than they actually did (or 3% more).

For the fifteen largest counties, the average difference in activity day estimates was - 104,856. Again, this indicated that if boat owners in the fifteen largest counties only used their boats in their own counties instead of in other counties (and if no one else use boats in their counties), they would generate 104,856 more boating activity days than they actually did (or less than 1% more).

Table 4.3 shows the same comparisons shown in the earlier two tables for regions in the state. Figures for counties within each region were aggregated to arrive at the totals. This table gives further evidence in support of the idea that boat owners living in large, highly-populated regions of the state use their boats in less populated regions. Coastal Southern California which includes Los Angeles and Orange counties had 1,098,736 fewer boating activity days than if only boats registered in those counties were used in their home counties. San Diego and the Interior Southern California counties actually had 267,451 and 371,958 more boating activity days than they would have if only boats registered there were used there. This strongly suggests that registered boat owners from Coastal Southern California shift their boat use to Interior Southern California and San Diego counties. The 1996 Boating Activity Day Matrix is also consistent with this conclusion. Boat owners registered in Los Angeles and Orange counties, for instance, show relatively high levels of boating activity days for boat use in San Bernardino, Riverside, and San Diego counties.

Registered boat owners in the nine-county San Francisco Bay Area had 1,816,025 fewer boating activity days than if only boats registered in those counties were exclusively used in those counties. Central Coast and Central Valley counties, on the other hand, had 17,180 and 1,165,845 more boating activity days than they would have if only boats registered in those counties were exclusively used there. Again, this suggests a shifting of boat use by registered owners in the Bay Area to the less populated counties along the coast and inland. The 1996 Boating Activity Day matrix is consistent with this conclusion. For instance, boat owners in large Bay Area counties like Alameda, Contra Costa, San Mateo, and Santa Clara have consistently high average levels of boating activity days for boat use in such counties as Sacramento, San Joaquin.

Finally, All Other counties were those remaining counties with individual population levels under 200,000. These counties collectively had 963,600 more boating activity days than if registered boat owners in these counties only used their boats in their home counties. This strongly suggests that these smaller counties, many with attractive and abundant recreational water resources, are receiving boat owners from larger nearby counties. Again, the 1996 Boating Activity Day Matrix bears this out. For instance, boat owners from the Bay Area have relatively high average boat use in such counties as Mendocino, Lake, and Almador. Boat owners in Sacramento County have relatively high boat use in Placer, and El Dorado Counties.

Table 4.3 Comparing 1995 Boating Activity Day Estimates For Regions Within The State

Region	*Population*	*Estimated Activity Days If Boats Only Used In County of Registration*	*Estimated Activity Days From Survey*	*Difference In Estimated Activity Days*
Coastal Southern California				
Total	13,022,500	6,623,176	5,524,440	-1,098,736
Average	3,255,625	1,655,794	1,381,110	-274,684
Counties: Los Angeles, Orange, Santa Barbara, Ventura				
San Diego				
Total	2,658,600	1,888,930	2,156,381	267,451
Interior Southern California				
Total	3,063,800	1,786,896	2,158,854	371,958
Average	1,021,267	595,632	719,618	123,986
Counties: San Bernardino, Riverside, Imperial				
San Francisco Bay Area				
Total	6,382,000	5,376,391	3,560,366	-1,816,025
Average	709,111	597,377	395,596	-201,781
Counties: Santa Clara, Alameda, Contra Costa, San Francisco, San Mateo, Sonoma, Solano, Marin, Napa				
Central Coast				
Total	828,600	521,576	538,756	17,180
Average	276,200	173,859	179,585	5,727
Counties: Monterey, Santa Cruz, San Luis Obispo				
Central Valley (Larger Counties)				
Total	4,478,900	3,982,318	5,148,162	1,165,845
Average	407,173	362,029	468,015	105,986
Counties: Sacramento, Fresno, Kern, San Joaquin, Stanislaus, Tulare, Merced, Shasta, Yolo, Kings, Madera				
All Other Counties				
Total	1,425,150	2,984,071	3,947,671	963,600
Average	64,780	135,640	179,440	43,800

5. Straight Line Boating Activity Day Projections

The first primary objectives of this study is to determine the extent to which boats are registered in different counties from where they are actually used. In this section, we extend this analysis to consider where boats will actually be used in the future, as opposed to where they are registered. Specifically, this section provides empirically based estimates of boating activity day forecasts for each county for the years: 2000, 2005, 2010, 2015, and 2020. These projections are referred to as "straight-line" because they do not take into account the effect that future overcrowding is likely to have on curtailing some future boat use (to be considered in the next section). The methodology used for producing these projections was extensively described in Section 2, so it will not be repeated here.

Table 5.1 shows the projected levels of boating activity days for each county for years between 1995 and 2020. We obtained these forecasts by combining boat registration forecasts obtained through multiple regression analysis with the 1996 Boating Activity Day Matrix.

Table 5.1 Straight Line Boating Activity Day Forecasts

	1995	*2000*	*2005*	*2010*	*2015*	*2020*
Alameda	581,667	679,837	743,742	807,646	878,052	948,459
Alpine	11,102	13,344	15,168	16,992	18,944	20,896
Amador	194,007	234,684	267,928	301,172	335,281	369,391
Butte	434,929	527,779	592,513	657,246	723,796	790,345
Calaveras	138,932	164,659	195,377	226,094	260,686	295,277
Colusa	21,449	25,071	28,133	31,196	34,344	37,493
Contra Costa	922,494	1,057,160	1,170,740	1,284,321	1,402,121	1,519,922
Del Norte	120,015	140,402	160,319	180,236	200,163	220,090
El Dorado	356,474	441,294	510,113	578,931	645,523	712,114
Fresno	606,357	722,696	811,660	900,624	999,303	1,097,981
Glenn	51,963	64,049	72,900	81,750	91,193	100,636
Humbolt	191,348	227,380	259,710	292,041	324,766	357,492
Imperial	116,303	141,675	159,457	177,240	196,187	215,135
Inyo	65,500	78,733	90,768	102,803	115,478	128,153
Kern	197,897	240,617	270,812	301,008	334,415	367,821
Kings	11,780	13,746	15,673	17,600	19,676	21,751
Lake	513,864	597,437	685,522	773,608	864,718	955,827
Lassen	218,267	279,713	314,581	349,449	384,548	419,647
Los Angeles	2,608,864	3,032,842	3,322,560	3,612,278	3,929,544	4,246,810
Madera	194,297	247,999	289,772	331,545	375,601	419,658
Marin	366,155	416,934	493,322	569,710	646,849	723,988
Mariposa	122,338	144,371	163,164	181,957	201,644	221,330
Mendocino	178,255	232,386	268,348	304,310	338,865	373,420
Merced	202,885	248,794	290,471	332,148	376,261	420,373
Modoc	5,314	6,058	6,746	7,434	8,342	9,251
Mono	110,709	128,671	141,619	154,567	168,486	182,405
Monterey	145,093	175,035	196,205	217,376	241,307	265,238
Napa	120,652	144,179	164,107	184,034	205,382	226,730
Nevada	157,192	193,552	219,919	246,286	272,275	298,264
Orange	1,716,924	1,997,014	2,239,503	2,481,992	2,733,752	2,985,513
Placer	333,306	372,909	426,697	480,485	543,858	607,230

Table 5.1 (Continued)

	1995	2000	2005	2010	2015	2020
Plumas	194,099	230,465	260,801	291,137	322,927	354,717
Riverside	921,011	1,162,243	1,363,063	1,563,884	1,780,689	1,997,495
Sacramento	1,280,271	1,579,559	1,743,217	1,906,875	2,087,716	2,268,558
San Benito	6,070	7,466	8,560	9,654	10,849	12,044
San Bernardino	1,121,541	1,378,063	1,585,491	1,792,920	2,016,740	2,240,560
San Diego	2,156,381	2,628,094	2,934,465	3,240,836	3,569,467	3,898,097
San Francisco	426,116	443,172	512,686	582,200	663,070	743,939
San Joaquin	990,489	1,190,277	1,336,307	1,482,336	1,645,693	1,809,049
San Luis Obispo	239,263	288,040	325,557	363,074	403,265	443,456
San Mateo	172,828	150,228	189,912	229,597	279,336	329,075
Santa Barbara	98,096	119,102	129,329	139,557	150,802	162,047
Santa Clara	132,765	143,705	162,077	180,449	201,995	223,541
Santa Cruz	154,399	186,225	203,230	220,236	239,673	259,110
Shasta	698,036	816,127	916,417	1,016,707	1,118,947	1,221,187
Sierra	25,361	29,368	33,309	37,250	41,543	45,837
Siskiyou	56,760	70,408	80,537	90,666	101,637	112,609
Solano	607,415	739,963	809,181	878,398	948,009	1,017,621
Sonoma	230,274	284,764	320,131	355,499	383,472	411,445
Stanislaus	171,041	201,601	226,391	251,180	277,723	304,265
Sutter	104,941	132,228	146,958	161,689	176,134	190,579
Tehama	36,610	47,012	52,516	58,021	64,104	70,187
Trinity	109,752	140,862	158,054	175,246	193,157	211,068
Tulare	322,794	443,476	524,092	604,708	706,229	807,750
Tuolumne	164,112	179,989	211,162	242,335	277,291	312,246
Ventura	1,100,557	1,325,111	1,495,754	1,666,396	1,852,597	2,038,798
Yolo	472,315	636,913	729,718	822,522	918,581	1,014,640
Yuba	153,729	205,311	233,556	261,802	290,146	318,490
California Total	*23,163,356*	*27,750,794*	*31,280,023*	*34,809,252*	*38,593,151*	*42,377,050*

Table 5.2 shows the percentage increase in projected activity days over the 1995 level for each county for years between 2000 and 2020. This table shows that the percentage increase in boating activity is projected to vary considerably between counties. Since the same boating activity day matrix was used for each year for each county, it is not variation in the geographical spread of boating use that is causing these variations. Rather, it is differences in the boat registration forecasts for each county that causes this variation. Each county has had a different past quantitative relationship between boat registration, population, and personal income. These different quantitative relationships are reflected in the regression coefficients (presented in Appendix D.) which produced the boat registration forecasts. Further, each county has different forecasted levels of population and personal income for the out years, and these also feed in to produce the boat registration forecasts. Therefore, the percentage change in boat registration forecasts from the 1995 levels vary considerably between counties, and this leads to considerable variation in the boating activity day forecasts presented in Table 5.2

Table 5.2 suggests that growth in boating activity days will be higher in less populated counties than in more highly populated counties. For example, the statewide average percentage growth rate in boating activity days between 1995 and 2005 shown in Table 5.3 is

Table 5.2 Percentage Increase In Boating Activity Days From 1995 Level Using Straight Line Forecasts

	2000	*2005*	*2010*	*2015*	*2020*
Alameda	16.88%	27.86%	38.85%	50.95%	63.06%
Alpine	20.19%	36.62%	53.05%	70.63%	88.21%
Amador	20.97%	38.10%	55.24%	72.82%	90.40%
Butte	21.35%	36.23%	51.12%	66.42%	81.72%
Calaveras	18.52%	40.63%	62.74%	87.64%	112.53%
Colusa	16.88%	31.16%	45.44%	60.12%	74.80%
Contra Costa	14.60%	26.91%	39.22%	51.99%	64.76%
Del Norte	16.99%	33.58%	50.18%	66.78%	83.39%
El Dorado	23.79%	43.10%	62.40%	81.09%	99.77%
Fresno	19.19%	33.86%	48.53%	64.80%	81.08%
Glenn	23.26%	40.29%	57.33%	75.50%	93.67%
Humbolt	18.83%	35.73%	52.62%	69.73%	86.83%
Imperial	21.81%	37.10%	52.39%	68.69%	84.98%
Inyo	20.20%	38.58%	56.95%	76.30%	95.65%
Kern	21.59%	36.84%	52.10%	68.98%	85.86%
Kings	16.69%	33.05%	49.41%	67.03%	84.64%
Lake	16.26%	33.41%	50.55%	68.28%	86.01%
Lassen	28.15%	44.13%	60.10%	76.18%	92.26%
Los Angeles	16.25%	27.36%	38.46%	50.62%	62.78%
Madera	27.64%	49.14%	70.64%	93.31%	115.99%
Marin	13.87%	34.73%	55.59%	76.66%	97.73%
Mariposa	18.01%	33.37%	48.73%	64.83%	80.92%
Mendocino	30.37%	50.54%	70.72%	90.10%	109.49%
Merced	22.63%	43.17%	63.71%	85.45%	107.20%
Modoc	14.01%	26.96%	39.90%	57.00%	74.11%
Mono	16.23%	27.92%	39.62%	52.19%	64.76%
Monterey	20.64%	35.23%	49.82%	66.31%	82.81%
Napa	19.50%	36.02%	52.53%	70.23%	87.92%
Nevada	23.13%	39.91%	56.68%	73.21%	89.75%
Orange	16.31%	30.44%	44.56%	59.22%	73.89%
Placer	11.88%	28.02%	44.16%	63.17%	82.18%
Plumas	18.74%	34.37%	49.99%	66.37%	82.75%
Riverside	26.19%	48.00%	69.80%	93.34%	116.88%
Sacramento	23.38%	36.16%	48.94%	63.07%	77.19%
San Benito	22.98%	41.01%	59.03%	78.72%	98.40%
San Bernardino	22.87%	41.37%	59.86%	79.82%	99.78%
San Diego	21.88%	36.08%	50.29%	65.53%	80.77%
San Francisco	4.00%	20.32%	36.63%	55.61%	74.59%
San Joaquin	20.17%	34.91%	49.66%	66.15%	82.64%
San Luis Obispo	20.39%	36.07%	51.75%	68.54%	85.34%
San Mateo	-13.08%	9.88%	32.85%	61.63%	90.41%
Santa Barbara	21.41%	31.84%	42.27%	53.73%	65.19%
Santa Clara	8.24%	22.08%	35.92%	52.14%	68.37%
Santa Cruz	20.61%	31.63%	42.64%	55.23%	67.82%

Table 5.2 (Continued)

	2000	2005	2010	2015	2020
Shasta	16.92%	31.29%	45.65%	60.30%	74.95%
Sierra	15.80%	31.34%	46.88%	63.81%	80.74%
Siskiyou	24.04%	41.89%	59.73%	79.06%	98.39%
Solano	21.82%	33.22%	44.61%	56.07%	67.53%
Sonoma	23.66%	39.02%	54.38%	66.53%	78.68%
Stanislaus	17.87%	32.36%	46.85%	62.37%	77.89%
Sutter	26.00%	40.04%	54.08%	67.84%	81.61%
Tehama	28.41%	43.45%	58.48%	75.10%	91.71%
Trinity	28.35%	44.01%	59.68%	75.99%	92.31%
Tulare	37.39%	62.36%	87.34%	118.79%	150.24%
Tuolumne	9.67%	28.67%	47.67%	68.96%	90.26%
Ventura	20.40%	35.91%	51.41%	68.33%	85.25%
Yolo	34.85%	54.50%	74.15%	94.48%	114.82%
Yuba	33.55%	51.93%	70.30%	88.74%	107.18%
California Total	*19.80%*	*35.04%*	*50.28%*	*66.61%*	*82.95%*

82.95%. Of the fifteen largest counties in terms of 1995 population, ten have percentage increases of less than the statewide average of 82.95% (San Joaquin, Fresno, San Diego, Sacramento, San Francisco, Orange, Santa Clara, Contra Costa, Alameda, and Los Angeles). Only five of the fifteen most populated counties have percentage increases in boating activity higher than the statewide average of 82.95% (Riverside, San Bernardino, San Mateo, Kern, and Ventura).

Section 6. Revised Boating Activity Day Projections For Overcrowded Waterways and Boating Facilities

The second primary objective of this study is to determine the extent to which overcrowding of waterways and facilities will lead to a reduction in boating activity. Section 5. presented straight line projections for increases in boating activity. For the entire state, boating activity days were projected to increase by 82.95% between 1995 and 2020. This estimate of a near doubling in boating activity implicitly assumes that there will be no behavioral changes on the part of boat owners. Specifically, it assumes that the growing number of boat owners in each county in the future will continue to use their boats at the same locations and for the same number of days as boat owners did in 1996. However, since the number of waterways and boating facilities is more or less fixed, this effectively means there will be more boats on the average waterway, and more boats using the average boating facility.

Under these circumstances, it is likely that boat owners will *change* their behavior from the 1996 patterns. Consumer theory suggests that when consumers are faced with increased congestion at their once optimal location, they will shift part or all of their activity to other locations which are less crowded. Further, since increased congestion makes boating more "costly" (at least implicitly) consumers will reduce their overall level of boating activity. As described in Section 2., the survey conducted for this study asked registered boat owners how many days they would use their boats in each county if the waterways there were twice as crowded, and how many days they would use their boats if the facilities there were twice as crowded.

Table 6.1 compares the 1996 boating activity day estimates presented before in Section 4 to the estimated number of boating activity days if there had been twice as many boats in the waterways of each county. As can be seen, if boating activity were to double, there would be a considerable reduction in anticipated levels of boating activity in every county . For the state as a whole, registered boat owners estimated they would have reduced their boating activity in 1996 by 31.35% if there had been twice the number of boats using each county's waterways.

Table 6.2 compares the 1996 boating activity day estimates presented before in Section 4 to the estimated number of boating activity days if there had been twice as many boats at the boating facilities of each county. As can be seen, if boating activity were to double, there would be a considerable reduction in anticipated boating activity in every county. For the state as a whole, registered boat owners estimated they would have reduced their boating activity in 1996 by 34.79% if there had been twice the number of boats using each county's boating facilities.

Table 6.1 Estimated Boating Activity Days if Twice As Many Boats Were on the Waterways Compared To Estimated Boating Activity Days in 1995

	1995 Estimated Activity Days From Survey	*Estimated Activity Days If Twice As Many Boats Were on Waterways*	*Reduction In Activity Days*	*Percentage Reduction*
Alameda	581,667	404,504	177,162	30.46%
Alpine	11,102	2,841	8,261	74.41%
Amador	194,007	149,024	44,983	23.19%
Butte	434,929	277,375	157,554	36.23%
Calaveras	138,932	93,716	45,217	32.55%
Colusa	21,449	10,012	11,437	53.32%
Contra Costa	922,494	561,922	360,572	39.09%
Del Norte	120,015	83,887	36,127	30.10%
El Dorado	356,474	237,583	118,890	33.35%
Fresno	606,357	268,262	338,095	55.76%
Glenn	51,963	32,478	19,485	37.50%
Humbolt	191,348	96,322	95,026	49.66%
Imperial	116,303	82,879	33,425	28.74%
Inyo	65,500	36,741	28,759	43.91%
Kern	197,897	104,071	93,826	47.41%
Kings	11,780	9,424	2,356	20.00%
Lake	513,864	318,493	195,371	38.02%
Lassen	218,267	197,461	20,805	9.53%
Los Angeles	2,608,864	1,988,617	620,247	23.77%
Madera	194,297	140,253	54,044	27.82%
Marin	366,155	261,527	104,628	28.57%
Mariposa	122,338	96,039	26,299	21.50%
Mendocino	178,255	123,735	54,521	30.59%
Merced	202,885	126,407	76,478	37.70%
Modoc	5,314	3,475	1,839	34.60%
Mono	110,709	64,115	46,594	42.09%
Monterey	145,093	94,629	50,464	34.78%
Napa	120,652	81,604	39,048	32.36%
Nevada	157,192	74,761	82,431	52.44%
Orange	1,716,924	1,270,665	446,259	25.99%
Placer	333,306	180,357	152,950	45.89%
Plumas	194,099	140,512	53,587	27.61%
Riverside	921,011	585,396	335,615	36.44%
Sacramento	1,280,271	675,841	604,430	47.21%
San Benito	6,070	1,759	4,311	71.02%
San Bernardino	1,121,541	520,948	600,592	53.55%
San Diego	2,156,381	1,526,657	629,724	29.20%

Table 6.1 (Continued)

	1995 Estimated Activity Days From Survey	*Estimated Activity Days If Twice As Many Boats Were on Waterways*	*Reduction In Activity Days*	*Percentage Reduction*
San Francisco	426,116	305,161	120,955	28.39%
San Joaquin	990,489	500,874	489,615	49.43%
San Luis Obispo	239,263	175,684	63,579	26.57%
San Mateo	172,828	145,784	27,044	15.65%
Santa Barbara	98,096	71,181	26,914	27.44%
Santa Clara	132,765	74,023	58,742	44.25%
Santa Cruz	154,399	98,361	56,038	36.29%
Shasta	698,036	434,114	263,922	37.81%
Sierra	25,361	18,962	6,400	25.23%
Siskiyou	56,760	36,020	20,741	36.54%
Solano	607,415	463,336	144,079	23.72%
Sonoma	230,274	131,247	99,028	43.00%
Stanislaus	171,041	108,238	62,803	36.72%
Sutter	104,941	75,909	29,032	27.66%
Tehama	36,610	17,866	18,744	51.20%
Trinity	109,752	64,137	45,615	41.56%
Tulare	322,794	220,240	102,554	31.77%
Tuolumne	164,112	120,569	43,542	26.53%
Ventura	1,100,557	954,418	146,139	13.28%
Yolo	472,315	411,313	61,003	12.92%
Yuba	153,729	83,426	70,303	45.73%
California Total	*23,163,356*	*15,902,616*	*7,260,741*	*31.35%*

Table 6.2 Estimated Boating Activity Days if Twice As Many Boats Were Using Boating Facilities Compared To Estimated Boating Activity Days in 1995

	1995 Estimated Activity Days From Survey	*Estimated Activity Days If Twice As Many Boats Were Using Facilities*	*Reduction In Activity Days*	*Percentage Reduction*
Alameda	581,667	386,494	195,173	33.55%
Alpine	11,102	2,841	8,261	74.41%
Amador	194,007	147,592	46,415	23.92%
Butte	434,929	277,903	157,025	36.10%
Calaveras	138,932	93,716	45,217	32.55%
Colusa	21,449	12,721	8,728	40.69%
Contra Costa	922,494	555,233	367,261	39.81%
Del Norte	120,015	83,887	36,127	30.10%
El Dorado	356,474	222,678	133,796	37.53%
Fresno	606,357	282,785	323,572	53.36%
Glenn	51,963	32,478	19,485	37.50%
Humbolt	191,348	77,417	113,931	59.54%
Imperial	116,303	79,712	36,591	31.46%
Inyo	65,500	31,509	33,991	51.89%
Kern	197,897	90,939	106,958	54.05%
Kings	11,780	9,424	2,356	20.00%
Lake	513,864	331,942	181,923	35.40%
Lassen	218,267	179,380	38,886	17.82%
Los Angeles	2,608,864	2,021,595	587,269	22.51%
Madera	194,297	140,253	54,044	27.82%
Marin	366,155	256,877	109,277	29.84%
Mariposa	122,338	96,039	26,299	21.50%
Mendocino	178,255	102,508	75,747	42.49%
Merced	202,885	121,722	81,163	40.00%
Modoc	5,314	3,475	1,839	34.60%
Mono	110,709	62,198	48,510	43.82%
Monterey	145,093	92,450	52,643	36.28%
Napa	120,652	75,626	45,026	37.32%
Nevada	157,192	62,128	95,063	60.48%
Orange	1,716,924	1,228,250	488,674	28.46%
Placer	333,306	207,789	125,517	37.66%
Plumas	194,099	149,707	44,392	22.87%
Riverside	921,011	490,160	430,850	46.78%
Sacramento	1,280,271	792,108	488,163	38.13%
San Benito	6,070	1,360	4,710	77.60%
San Bernardino	1,121,541	453,062	668,479	59.60%
San Diego	2,156,381	1,540,096	616,285	28.58%
San Francisco	426,116	288,094	138,022	32.39%
San Joaquin	990,489	502,214	488,274	49.30%

Table 6.2 (Continued)

	1995 Estimated Activity Days From Survey	*Estimated Activity Days If Twice As Many Boats Were Using Facilities*	*Reduction In Activity Days*	*Percentage Reduction*
San Luis Obispo	239,263	175,684	63,579	26.57%
San Mateo	172,828	135,369	37,460	21.67%
Santa Barbara	98,096	71,181	26,914	27.44%
Santa Clara	132,765	72,816	59,949	45.15%
Santa Cruz	154,399	81,483	72,916	47.23%
Shasta	698,036	415,312	282,724	40.50%
Sierra	25,361	18,962	6,400	25.23%
Siskiyou	56,760	36,020	20,741	36.54%
Solano	607,415	448,870	158,545	26.10%
Sonoma	230,274	141,162	89,112	38.70%
Stanislaus	171,041	102,739	68,301	39.93%
Sutter	104,941	75,909	29,032	27.66%
Tehama	36,610	17,866	18,744	51.20%
Trinity	109,752	64,137	45,615	41.56%
Tulare	322,794	169,137	153,656	47.60%
Tuolumne	164,112	120,569	43,542	26.53%
Ventura	1,100,557	883,599	216,958	19.71%
Yolo	472,315	403,664	68,651	14.54%
Yuba	153,729	84,118	69,611	45.28%
California Total	*23,163,356*	*15,104,962*	*8,058,395*	*34.79%*

Table 6.3 shows the revised forecasts for boating activity days in each county for years between 1995 and 2020 taking the overcrowding of waterways into account. We generated these forecasts by combining the straight line boating day activity forecasts presented in Section 5. with information from the Overcrowded Waterways Boating Activity Day Matrix. The method for obtaining these results was described in detail in Section 2.

Table 6.4 gives some indication of how important it is to take the overcrowding of waterways into account. This table shows the overall decrease in the forecasted level of boating activity days for each county once the effects of waterway overcrowding are taken into account. As can be seen, counties with relatively large population levels tend to be those that have the largest decreases in forecasted boating activity. For instance, of the fifteen largest counties in terms of population, ten were in the top fifteen in terms of decrease in forecasted level of boating activity (San Bernardino, San Diego, Riverside, Sacramento, San Joaquin, Los Angeles, Orange, Fresno, and Ventura).

Table 6.5 shows the revised forecasts for boating activity days in each county for years between 1995 and 2020 taking the overcrowding of boating facilities into account. We generated these forecasts by combining the straight line boating day activity forecasts presented in Section 5. with information from the Overcrowded Facilities Boating Activity Day Matrix. The method for obtaining these results was described in detail in Section 2.

Table 6.6 shows the overall decrease in the forecasted level of boating activity days for each county once the effects of facility overcrowding are taken into account. Again, as in the decreases shown in Table 6.4, counties with relatively large population levels tend to be those with the largest decreases in forecasted boating activity.

Finally, Table 6.7 shows the revised forecasts for boating activity days in each county for years between 1995 and 2020 taking *total* overcrowding into account (from both overcrowded waterways and facilities). We generated these forecasts by combining the straight line boating day activity forecasts presented in Section 5. with a linear combination of data from both the two Overcrowded Boating Activity Day Matrixes. Using the method described in detail in Section 2., the average percentage reduction from both kinds of overcrowding was multiplied by 1.33 to obtain an estimate of the combined effects from both types of overcrowding. Table 6.8 shows the overall decrease in the forecasted levels of boating activity days once the combined effects of both kinds of overcrowding are taken into account.

The information in Table 6.7 shows how potentially misleading taking straight line projections can be when forecasting future boating activity. For the State as a whole, the straight line forecasts estimate an 82.95% increase in boating activity days from 1995 to 2020. Once the potential effects of the total overcrowded waterways and facilities are accounted for, these forecasts estimate only a16.04% increase in boating activity days over the same period.

While suggestive of the potentially large effect overcrowding would likely have on boating activity, one should be cautious in interpreting the figures shown in Tables 6.3 through 6.8. These estimates are based on survey responses in 1996, and boat owner attitudes and behaviors may change in future years. Further, it was not possible in estimating these figures, given the survey methodology, to account for the likely shifting of boating activity from more crowded counties to less crowded counties. Because of these two mitigating factors, the revised estimate of only a 16.04% increase in boating activity is probably too low. A more conservative estimate would fall somewhere between the 82.95% (straight line) estimate and the 16.04% (revised) estimate.

Table 6.3 Revised Boating Activity Day Forecasts For Overcrowded Waterways

	1995	2000	2005	2010	2015	2020
Alameda	581,667	644,890	680,622	712,078	741,782	766,295
Alpine	11,102	11,339	11,034	10,284	8,987	7,179
Amador	194,007	223,275	244,258	262,599	278,672	291,964
Butte	434,929	486,963	514,745	535,545	549,653	556,382
Calaveras	138,932	154,735	169,543	179,930	186,334	187,133
Colusa	21,449	22,814	23,459	23,637	23,335	22,540
Contra Costa	922,494	996,839	1,047,597	1,087,423	1,117,180	1,135,178
Del Norte	120,015	133,223	144,112	153,011	159,924	164,845
El Dorado	356,474	406,274	436,786	458,437	470,951	475,167
Fresno	606,357	645,381	658,428	656,918	638,216	601,607
Glenn	51,963	58,463	61,885	64,178	65,376	65,289
Humbolt	191,348	206,117	213,632	215,721	212,311	203,342
Imperial	116,303	132,792	142,453	150,551	157,460	162,595
Inyo	65,500	71,749	75,394	77,097	76,791	74,331
Kern	197,897	215,991	223,505	226,650	225,039	218,081
Kings	11,780	13,287	14,637	15,861	17,038	18,069
Lake	513,864	560,495	598,456	624,936	640,245	643,271
Lassen	218,267	272,207	301,349	329,430	356,623	382,741
Los Angeles	2,608,864	2,915,662	3,106,463	3,281,967	3,456,609	3,612,904
Madera	194,297	228,933	250,166	266,402	278,113	284,267
Marin	366,155	400,412	444,364	479,209	505,154	521,811
Mariposa	122,338	138,782	151,459	162,895	173,544	182,830
Mendocino	178,255	210,802	226,866	238,491	245,480	248,372
Merced	202,885	227,573	243,202	252,378	255,058	250,507
Modoc	5,314	5,764	6,117	6,407	6,697	6,879
Mono	110,709	119,885	124,978	128,796	131,479	132,689
Monterey	145,093	162,472	172,166	179,711	185,653	188,849
Napa	120,652	135,080	144,978	152,745	158,702	162,215
Nevada	157,192	170,074	173,898	173,084	167,742	157,894
Orange	1,716,924	1,912,337	2,062,333	2,194,526	2,312,937	2,412,156
Placer	333,306	352,576	371,833	383,124	386,204	378,225
Plumas	194,099	218,544	236,057	250,953	263,753	273,678
Riverside	921,011	1,051,314	1,124,666	1,166,105	1,175,019	1,146,739
Sacramento	1,280,271	1,405,231	1,445,623	1,466,262	1,466,094	1,441,807
San Benito	6,070	6,247	6,067	5,606	4,784	3,627
San Bernardino	1,121,541	1,209,274	1,234,266	1,218,170	1,154,716	1,043,423
San Diego	2,156,381	2,460,207	2,625,254	2,764,879	2,886,388	2,978,645
San Francisco	426,116	438,137	483,120	521,666	558,407	586,435
San Joaquin	990,489	1,071,598	1,105,680	1,118,477	1,107,570	1,070,028
San Luis Obispo	239,263	272,437	294,356	313,149	329,813	342,889
San Mateo	172,828	153,302	186,975	217,796	252,399	282,522
Santa Barbara	98,096	112,104	118,031	123,373	128,571	133,062
Santa Clara	132,765	138,466	146,244	151,773	155,391	155,915
Santa Cruz	154,399	172,293	179,902	186,152	191,630	195,332
Shasta	698,036	763,924	808,018	841,215	863,842	875,145

Table 6.3 (Continued)

	1995	2000	2005	2010	2015	2020
Sierra	25,361	28,197	30,675	32,844	34,855	36,499
Siskiyou	56,760	64,222	68,209	70,876	72,274	72,122
Solano	607,415	701,662	745,424	785,445	821,919	854,609
Sonoma	230,274	255,786	266,410	272,362	273,761	272,236
Stanislaus	171,041	188,375	199,491	207,968	214,119	217,246
Sutter	104,941	122,716	130,680	137,500	143,077	147,553
Tehama	36,610	40,173	40,834	40,648	39,457	37,230
Trinity	109,752	124,267	129,143	131,781	132,149	130,086
Tulare	322,794	390,800	420,256	436,919	439,703	422,199
Tuolumne	164,112	175,369	195,100	211,688	226,553	237,466
Ventura	1,100,557	1,289,209	1,424,433	1,552,630	1,684,499	1,808,001
Yolo	472,315	608,246	678,354	743,753	806,484	864,168
Yuba	153,729	173,807	178,093	177,633	172,400	162,387
California Total	*23,163,356*	*26,028,039*	*27,844,264*	*29,323,382*	*30,534,760*	*31,358,625*

Table 6.4 Difference Between Revised and Straight Line Boating Activity Day Forecasts For Overcrowded Waterways

	2000	2005	2010	2015	2020
Alameda	34,947	63,119	95,568	136,270	182,164
Alpine	2,005	4,133	6,708	9,957	13,716
Amador	11,409	23,670	38,573	56,609	77,427
Butte	40,816	77,768	121,701	174,143	233,963
Calaveras	9,923	25,833	46,165	74,351	108,144
Colusa	2,257	4,675	7,558	11,009	14,953
Contra Costa	60,320	123,143	196,897	284,941	384,744
Del Norte	7,180	16,207	27,224	40,239	55,245
El Dorado	35,020	73,326	120,494	174,572	236,948
Fresno	77,315	153,232	243,706	361,086	496,375
Glenn	5,586	11,014	17,573	25,816	35,347
Humbolt	21,263	46,078	76,319	112,455	154,150
Imperial	8,882	17,004	26,688	38,727	52,540
Inyo	6,984	15,374	25,707	38,688	53,822
Kern	24,626	47,308	74,358	109,375	149,740
Kings	459	1,036	1,739	2,638	3,682
Lake	36,942	87,066	148,672	224,472	312,556
Lassen	7,506	13,232	20,020	27,925	36,906
Los Angeles	117,181	216,097	330,311	472,935	633,905
Madera	19,066	39,606	65,142	97,488	135,391
Marin	16,522	48,958	90,501	141,695	202,177
Mariposa	5,590	11,705	19,062	28,100	38,500
Mendocino	21,584	41,483	65,819	93,385	125,047
Merced	21,221	47,268	79,770	121,203	169,866
Modoc	294	629	1,026	1,645	2,372
Mono	8,787	16,642	25,772	37,008	49,717
Monterey	12,563	24,040	37,665	55,654	76,389
Napa	9,099	19,129	31,289	46,680	64,515
Nevada	23,478	46,021	73,202	104,533	140,371
Orange	84,677	177,169	287,465	420,815	573,357
Placer	20,332	54,864	97,361	157,654	229,005
Plumas	11,921	24,744	40,184	59,174	81,039
Riverside	110,929	238,398	397,779	605,670	850,756
Sacramento	174,328	297,593	440,613	621,622	826,752
San Benito	1,219	2,493	4,047	6,065	8,418
San Bernardino	168,789	351,225	574,749	862,024	1,197,137
San Diego	167,887	309,211	475,957	683,079	919,452
San Francisco	5,035	29,565	60,534	104,662	157,504
San Joaquin	118,679	230,627	363,859	538,123	739,021
San Luis Obispo	15,604	31,201	49,925	73,452	100,567
San Mateo	(3,074)	2,938	11,801	26,937	46,554

Table 6.4 (Continued)

	2000	*2005*	*2010*	*2015*	*2020*
Santa Cruz	13,932	23,328	34,084	48,042	63,777
Shasta	52,203	108,400	175,493	255,105	346,042
Sierra	1,171	2,634	4,406	6,689	9,338
Siskiyou	6,186	12,328	19,790	29,364	40,487
Solano	38,301	63,756	92,953	126,090	163,012
Sonoma	28,978	53,721	83,137	109,711	139,209
Stanislaus	13,226	26,900	43,212	63,603	87,019
Sutter	9,512	16,278	24,189	33,057	43,025
Tehama	6,839	11,682	17,373	24,647	32,956
Trinity	16,595	28,911	43,465	61,009	80,982
Tulare	52,676	103,836	167,789	266,526	385,551
Tuolumne	4,620	16,063	30,647	50,738	74,780
Ventura	35,902	71,321	113,766	168,099	230,797
Yolo	28,668	51,363	78,769	112,097	150,472
Yuba	31,504	55,463	84,169	117,746	156,103
California Total	*1,722,755*	*3,435,759*	*5,485,871*	*8,058,391*	*11,018,426*

Table 6.5 Revised Boating Activity Day Forecasts For Overcrowded Facilities

	1995	2000	2005	2010	2015	2020
Alameda	581,667	641,338	674,206	702,362	727,929	747,776
Alpine	11,102	11,339	11,034	10,284	8,987	7,179
Amador	194,007	222,911	243,504	261,371	276,870	289,499
Butte	434,929	487,100	515,005	535,953	550,236	557,167
Calaveras	138,932	154,735	169,543	179,930	186,334	187,133
Colusa	21,449	23,348	24,566	25,427	25,942	26,081
Contra Costa	922,494	995,720	1,045,313	1,083,771	1,111,894	1,128,040
Del Norte	120,015	133,223	144,112	153,011	159,924	164,845
El Dorado	356,474	401,883	427,593	443,330	449,064	445,460
Fresno	606,357	648,702	665,010	667,386	653,727	622,929
Glenn	51,963	58,463	61,885	64,178	65,376	65,289
Humbolt	191,348	201,886	204,465	200,538	189,938	172,674
Imperial	116,303	131,951	140,843	148,023	153,792	157,618
Inyo	65,500	70,479	72,597	72,420	69,753	64,539
Kern	197,897	212,544	216,884	216,243	209,731	197,124
Kings	11,780	13,287	14,637	15,861	17,038	18,069
Lake	513,864	563,038	604,449	635,170	655,697	664,786
Lassen	218,267	265,684	289,850	312,031	332,354	350,667
Los Angeles	2,608,864	2,921,892	3,117,953	3,299,529	3,481,754	3,646,609
Madera	194,297	228,933	250,166	266,402	278,113	284,267
Marin	366,155	399,678	442,188	475,187	498,857	512,827
Mariposa	122,338	138,782	151,459	162,895	173,544	182,830
Mendocino	178,255	202,399	210,715	212,865	209,123	199,687
Merced	202,885	226,273	240,307	247,491	247,633	240,102
Modoc	5,314	5,764	6,117	6,407	6,697	6,879
Mono	110,709	119,523	124,293	127,736	129,957	130,644
Monterey	145,093	161,930	171,128	178,085	183,250	185,551
Napa	120,652	133,687	142,049	147,955	151,556	152,338
Nevada	157,192	166,476	166,846	161,866	151,723	136,382
Orange	1,716,924	1,904,289	2,045,494	2,167,204	2,272,940	2,357,661
Placer	333,306	356,223	381,673	400,586	414,480	419,299
Plumas	194,099	220,590	240,303	257,848	273,907	287,584
Riverside	921,011	1,019,837	1,057,017	1,053,230	1,003,152	905,324
Sacramento	1,280,271	1,438,764	1,502,868	1,551,017	1,585,668	1,600,838
San Benito	6,070	6,134	5,836	5,232	4,222	2,847
San Bernardino	1,121,541	1,190,195	1,194,566	1,153,205	1,057,279	908,108
San Diego	2,156,381	2,463,790	2,631,853	2,775,036	2,900,965	2,998,267
San Francisco	426,116	437,426	478,949	513,125	543,640	564,212
San Joaquin	990,489	1,071,923	1,106,312	1,119,474	1,109,044	1,072,052
San Luis Obispo	239,263	272,437	294,356	313,149	329,813	342,889
San Mateo	172,828	154,486	185,844	213,251	242,025	264,593
Santa Barbara	98,096	112,104	118,031	123,373	128,571	133,062
Santa Clara	132,765	138,358	145,919	151,184	154,434	154,526
Santa Cruz	154,399	168,097	172,876	175,887	177,161	176,124
Shasta	698,036	760,205	800,295	828,712	845,668	850,492

Table 6.5 (Continued)

	1995	*2000*	*2005*	*2010*	*2015*	*2020*
Solano	607,415	697,816	739,023	776,113	809,260	838,243
Sonoma	230,274	258,688	271,789	280,686	284,746	286,175
Stanislaus	171,041	187,217	197,135	204,184	208,550	209,627
Sutter	104,941	122,716	130,680	137,500	143,077	147,553
Tehama	36,610	40,173	40,834	40,648	39,457	37,230
Trinity	109,752	124,267	129,143	131,781	132,149	130,086
Tulare	322,794	364,551	368,514	353,309	306,894	230,080
Tuolumne	164,112	175,369	195,100	211,688	226,553	237,466
Ventura	1,100,557	1,271,812	1,389,871	1,497,499	1,603,039	1,696,158
Yolo	472,315	604,651	671,914	733,876	792,428	845,301
Yuba	153,729	174,116	178,639	178,461	173,558	163,923
California Total	*23,163,356*	*25,838,780*	*27,466,816*	*28,720,712*	*29,649,477*	*30,148,157*

Table 6.6 Difference Between Revised and Straight Line Boating Activity Day Forecasts For Overcrowded Facilities

	2000	2005	2010	2015	2020
Alameda	38,500	69,536	105,284	150,124	200,683
Alpine	2,005	4,133	6,708	9,957	13,716
Amador	11,772	24,424	39,801	58,411	79,891
Butte	40,679	77,508	121,293	173,559	233,178
Calaveras	9,923	25,833	46,165	74,351	108,144
Colusa	1,722	3,567	5,768	8,402	11,411
Contra Costa	61,439	125,427	200,550	290,227	391,881
Del Norte	7,180	16,207	27,224	40,239	55,245
El Dorado	39,411	82,519	135,600	196,458	266,655
Fresno	73,993	146,650	233,238	345,576	475,053
Glenn	5,586	11,014	17,573	25,816	35,347
Humbolt	25,493	55,246	91,503	134,828	184,818
Imperial	9,724	18,615	29,216	42,396	57,517
Inyo	8,255	18,171	30,383	45,726	63,614
Kern	28,073	53,929	84,765	124,683	170,698
Kings	459	1,036	1,739	2,638	3,682
Lake	34,399	81,073	138,438	209,021	291,042
Lassen	14,029	24,731	37,418	52,194	68,980
Los Angeles	110,950	204,607	312,749	447,790	600,201
Madera	19,066	39,606	65,142	97,488	135,391
Marin	17,257	51,134	94,523	147,992	211,161
Mariposa	5,590	11,705	19,062	28,100	38,500
Mendocino	29,987	57,633	91,445	129,742	173,733
Merced	22,521	50,164	84,657	128,627	180,272
Modoc	294	629	1,026	1,645	2,372
Mono	9,148	17,326	26,832	38,530	51,762
Monterey	13,106	25,078	39,291	58,057	79,687
Napa	10,492	22,057	36,079	53,825	74,391
Nevada	27,076	53,073	84,420	120,552	161,882
Orange	92,725	194,009	314,787	460,812	627,852
Placer	16,686	45,023	79,899	129,377	187,931
Plumas	9,876	20,498	33,289	49,020	67,133
Riverside	142,406	306,046	510,654	777,538	1,092,171
Sacramento	140,794	240,349	355,858	502,049	667,720
San Benito	1,332	2,724	4,422	6,627	9,197
San Bernardino	187,867	390,925	639,715	959,461	1,332,452
San Diego	164,304	302,612	465,800	668,501	899,830
San Francisco	5,745	33,737	69,075	119,430	179,728
San Joaquin	118,354	229,995	362,863	536,649	736,997
San Luis Obispo	15,604	31,201	49,925	73,452	100,567
San Mateo	(4,258)	4,069	16,346	37,311	64,482
Santa Barbara	6,998	11,298	16,184	22,231	28,985

Table 6.6 (Continued)

	2000	2005	2010	2015	2020
Santa Clara	5,347	16,158	29,264	47,560	69,014
Santa Cruz	18,128	30,354	44,349	62,512	82,986
Shasta	55,922	116,122	187,995	273,279	370,694
Sierra	1,171	2,634	4,406	6,689	9,338
Siskiyou	6,186	12,328	19,790	29,364	40,487
Solano	42,147	70,158	102,286	138,749	179,378
Sonoma	26,076	48,342	74,812	98,726	125,270
Stanislaus	14,384	29,255	46,996	69,172	94,638
Sutter	9,512	16,278	24,189	33,057	43,025
Tehama	6,839	11,682	17,373	24,647	32,956
Trinity	16,595	28,911	43,465	61,009	80,982
Tulare	78,925	155,578	251,399	399,336	577,671
Tuolumne	4,620	16,063	30,647	50,738	74,780
Ventura	53,300	105,882	168,897	249,558	342,641
Yolo	32,262	57,803	88,646	126,153	169,339
Yuba	31,194	54,918	83,341	116,588	154,567
California Total	*1,912,014*	*3,813,207*	*6,088,540*	*8,943,674*	*12,228,893*

Table 6.7 Revised Boating Activity Day Forecasts For Total Overcrowding

	1995	2000	2005	2010	2015	2020
Alameda	581,667	630,873	655,305	673,745	687,123	693,228
Alpine	11,102	10,671	9,657	8,048	5,668	2,607
Amador	194,007	219,230	235,865	248,923	258,601	264,512
Butte	434,929	473,449	488,996	495,250	491,994	478,918
Calaveras	138,932	151,428	160,932	164,542	161,551	151,085
Colusa	21,449	22,418	22,639	22,311	21,403	19,916
Contra Costa	922,494	975,987	1,005,027	1,019,356	1,018,676	1,002,171
Del Norte	120,015	130,829	138,710	143,937	146,511	146,430
El Dorado	356,474	391,673	406,216	408,201	398,169	376,379
Fresno	606,357	621,824	611,738	582,661	528,195	450,363
Glenn	51,963	56,601	58,214	58,320	56,771	53,506
Humbolt	191,348	196,209	192,161	180,159	159,911	131,513
Imperial	116,303	129,271	135,712	139,970	142,106	141,764
Inyo	65,500	68,574	68,404	65,410	59,203	49,862
Kern	197,897	205,484	203,321	194,926	178,376	154,196
Kings	11,780	13,134	14,292	15,281	16,159	16,841
Lake	513,864	549,876	573,430	582,201	575,722	553,429
Lassen	218,267	265,356	289,273	311,157	331,136	349,056
Los Angeles	2,608,864	2,880,755	3,042,091	3,183,571	3,315,727	3,424,072
Madera	194,297	222,578	236,964	244,688	245,617	239,137
Marin	366,155	394,415	426,594	446,360	453,724	448,430
Mariposa	122,338	136,918	147,557	156,541	164,177	169,997
Mendocino	178,255	198,005	202,271	199,467	190,114	174,233
Merced	202,885	219,632	225,516	222,530	209,707	186,948
Modoc	5,314	5,666	5,907	6,065	6,148	6,088
Mono	110,709	116,715	118,974	119,499	118,128	114,753
Monterey	145,093	157,923	163,461	166,072	165,500	161,187
Napa	120,652	131,118	136,649	139,122	138,378	134,125
Nevada	157,192	159,850	153,857	141,205	122,218	96,763
Orange	1,716,924	1,878,746	1,992,051	2,080,490	2,146,000	2,184,707
Placer	333,306	348,230	360,106	362,312	352,503	329,273
Plumas	194,099	215,934	230,640	242,155	250,797	255,936
Riverside	921,011	993,353	1,000,101	958,262	858,551	702,210
Sacramento	1,280,271	1,369,477	1,384,588	1,375,895	1,338,602	1,272,244
San Benito	6,070	5,766	5,082	4,008	2,388	301
San Bernardino	1,121,541	1,140,292	1,090,725	983,277	802,417	554,167
San Diego	2,156,381	2,406,633	2,526,583	2,612,998	2,668,413	2,685,242
San Francisco	426,116	435,985	470,484	495,794	513,675	519,118
San Juaquin	990,489	1,032,255	1,029,225	997,855	929,179	825,037
San Luis Obispo	239,263	267,235	283,956	296,508	305,329	309,367
San Mateo	172,828	155,116	185,241	210,832	236,503	255,051
Santa Barbara	98,096	109,772	114,265	117,978	121,161	123,400
Santa Clara	132,765	136,648	140,750	141,822	139,219	132,447
Santa Cruz	154,399	164,852	167,442	167,947	165,970	161,267

Table 6.7 (Continued)

	1995	2000	2005	2010	2015	2020
Shasta	698,036	744,044	766,736	774,382	766,691	743,363
Sierra	25,361	27,807	29,797	31,375	32,625	33,386
Siskiyou	56,760	62,160	64,100	64,279	62,486	58,626
Solano	607,415	686,331	719,905	748,239	771,450	789,361
Sonoma	230,274	248,061	252,089	250,199	244,513	235,126
Stanislaus	171,041	183,194	188,954	191,041	189,206	183,160
Sutter	104,941	119,546	125,254	129,437	132,058	133,212
Tehama	36,610	37,894	36,941	34,857	31,241	26,245
Trinity	109,752	118,735	119,506	117,293	111,812	103,092
Tulare	322,794	355,742	351,149	325,249	262,321	165,603
Tuolumne	164,112	173,829	189,745	201,473	209,640	212,539
Ventura	1,100,557	1,265,644	1,377,618	1,477,954	1,574,159	1,656,506
Yolo	472,315	596,294	656,940	710,912	759,748	801,433
Yuba	153,729	163,512	159,969	150,129	133,924	111,377
California Total	*23,163,356*	*25,327,614*	*26,447,379*	*27,092,979*	*27,258,441*	*26,878,838*

Table 6.8 Difference Between Revised and Straight Line Boating Activity Day Forecasts For Total Overcrowding

	2000	2005	2010	2015	2020
Alameda	48,964	88,437	133,901	190,929	255,231
Alpine	2,673	5,511	8,944	13,276	18,288
Amador	15,454	32,062	52,249	76,680	104,879
Butte	54,330	103,517	161,996	231,802	311,428
Calaveras	13,231	34,445	61,553	99,135	144,192
Colusa	2,653	5,495	8,884	12,941	17,576
Contra Costa	81,173	165,713	264,965	383,445	517,750
Del Norte	9,573	21,609	36,299	53,651	73,660
El Dorado	49,621	103,897	170,729	247,354	335,735
Fresno	100,872	199,922	317,963	471,108	647,618
Glenn	7,449	14,686	23,430	34,422	47,129
Humbolt	31,171	67,549	111,881	164,855	225,979
Imperial	12,404	23,746	37,270	54,082	73,372
Inyo	10,159	22,364	37,393	56,275	78,291
Kern	35,133	67,491	106,082	156,039	213,625
Kings	612	1,381	2,319	3,517	4,909
Lake	47,560	112,092	191,406	288,995	402,399
Lassen	14,357	25,309	38,292	53,412	70,591
Los Angeles	152,087	280,469	428,707	613,817	822,737
Madera	25,421	52,808	86,856	129,984	180,522
Marin	22,519	66,728	123,349	193,125	275,559
Mariposa	7,453	15,607	25,417	37,467	51,334
Mendocino	34,381	66,077	104,843	148,751	199,187
Merced	29,162	64,955	109,618	166,553	233,425
Modoc	392	839	1,368	2,194	3,163
Mono	11,956	22,645	35,069	50,358	67,652
Monterey	17,113	32,745	51,304	75,807	104,051
Napa	13,061	27,457	44,912	67,003	92,604
Nevada	33,703	66,062	105,081	150,057	201,502
Orange	118,268	247,452	401,502	587,752	800,806
Placer	24,679	66,591	118,173	191,354	277,957
Plumas	14,531	30,161	48,982	72,130	98,781
Riverside	168,890	362,963	605,622	922,138	1,295,284
Sacramento	210,081	358,628	530,980	749,114	996,314
San Benito	1,700	3,478	5,646	8,461	11,743
San Bernardino	237,771	494,766	809,643	1,214,323	1,686,393
San Diego	221,461	407,882	627,838	901,054	1,212,855
San Francisco	7,187	42,202	86,406	149,395	224,821
San Juaquin	158,023	307,082	484,481	716,514	984,013
San Luis Obispo	20,805	41,601	66,566	97,936	134,089
San Mateo	(4,888)	4,671	18,764	42,832	74,024

Table 6.8 (Continued)

	1995	*2000*	*2005*	*2010*	*2015*	*2020*
Santa Barbara	9,330		15,064	21,578	29,641	38,647
Santa Clara	7,058		21,327	38,626	62,776	91,093
Santa Cruz	21,373		35,788	52,289	73,703	97,842
Shasta	72,083		149,681	242,325	352,256	477,824
Sierra	1,561		3,512	5,875	8,919	12,451
Siskiyou	8,248		16,437	26,387	39,151	53,983
Solano	53,632		89,276	130,159	176,560	228,259
Sonoma	36,703		68,042	105,299	138,958	176,319
Stanislaus	18,407		37,437	60,139	88,517	121,105
Sutter	12,682		21,704	32,252	44,076	57,367
Tehama	9,118		15,576	23,164	32,863	43,942
Trinity	22,127		38,548	57,954	81,345	107,976
Tulare	87,734		172,943	279,459	443,908	642,148
Tuolumne	6,160		21,417	40,863	67,651	99,707
Ventura	59,468		118,135	188,442	278,438	382,292
Yolo	40,620		72,778	111,610	158,833	213,207
Yuba	41,799		73,587	111,673	156,222	207,113
California Total	*2,423,180*		*4,832,644*	*7,716,274*	*11,334,710*	*15,498,213*

Section 7. Conclusions

This study offers several important suggestions. First, it has been demonstrated that recreational boat owners actually use their boats in different locations than where they register their boats. This has important implications for air quality management. Generally, it has been shown that boat owners from the more highly populated, urban counties shift their boat usage to less populated counties. These smaller counties may well have fewer air quality problems than the urban counties where most boat owners live. Further, as boating registration increases in the state due to population growth and economic growth, boating activity will continue to be shifted to less populated counties in the state. Therefore, earlier studies projecting large increases in boat registration at the county level may have been somewhat misinterpreted, and the potential impact of this growth on air quality may have been exaggerated.

Second, it has been shown that boat owners prefer to use their boats less frequently when there are overcrowded boating conditions. The projected future growth in boat registration and boating activity is likely to lead to overcrowded conditions on waterways and at boating facilities. This overcrowding due to growth is likely to cause boat owners to reduce their boating activity somewhat as a result. The cumulative impact of this growth induced change in behavior is likely to be considerable. Empirically based projections presented in this study suggest that over the next 25 years, statewide boating activity might grow by only one-third instead of over three-fourths once the effects of overcrowding are taken into account.

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APPENDICES

APPENDIX A.

SURVEY QUESTIONNAIRE

Appendix A. **Survey Questionnaire**

NOTE: For Questions V2 - V3a below, the percentage responding (out of 1048) to each answer is given next to the answer. Questions V4 - V6 were county specific, and reporting on the categorical responses would be too lengthy. This information is best summarized in the matrix tables appearing in Appendix B.

Hello, my name is (PRI Survey Personnel), and I am calling from the Public Research Institute at San Francisco State University. May I please speak to (Registered Boat Owner).

Last year we spoke to you about the expenses involved in owning and using a boat. That information was very useful. Tonight we would like to ask you a few follow up questions for the State of California's Air Resources Board. This survey is confidential and has nothing to do with the marketing of any product. The interview takes less than five minutes. May we count on your participation?

1. YES continue to V1.
2. NO seek alternate respondent or arrange callback
3. REFUSAL ETC. go to END

In 1995, you told us about your
[fill boat type].

When answering the following questions, please refer to this same boat.
1. YES goto V2
2. NO goto noboat
8. DON'T KNOW goto contact2
9. REFUSED

V1. Do you still own this boat?
1. YES goto V2
2. NO goto noboat
8. DON'T KNOW goto contact2
9. REFUSED

V2. Thinking about the amount of time that you spend boating in California, would you change your boating practices if there were twice as many boats on the water?

1. YES goto V2a	47.90%
2. NO goto V3	50.29%
8. DON'T KNOW goto V3	1.72%
9. REFUSED goto V3	0.10%

V2a. Would you use your boat more or less if this were the case?

1. MORE goto V3	2.59%
2. LESS goto V3	94.02%
8. DON'T KNOW goto V3	2.19%
9. REFUSED goto V3	1.20%

V3. In general, would you change your boating practices if the boating facilities you used were twice as crowded?

[IF THEY ASK WHAT A BOATING FACILITY IS: Boating facilities include launches, ramps, marina slips, etc..]

1. YES goto V3a	57.16%
2. NO goto V4	41.51%
8. DON' KNOW goto V4	1.15%
9. REFUSED goto V4	0.19%

V3a. Would you use your boat more or less if this were the case?

1. MORE go to V4	1.84%
2. LESS go to V4	95.99%
8. DON' KNOW goto V4	1.50%
9. REFUSED goto V4	0.67%

V4. I will be asking you to name counties in California where you have used your boat, the number of days you used your boat in each county, and how waterway and facility overcrowding would affect your boating activities.

Thinking back to this past year, from September 1995 through July 1996, please list all the counties where you used your boat.

0. DON'T KNOW COUNTY NAME goto dk1
1. BEGIN SELECTING COUNTIES
2. DID NOT USE BOAT
9. REFUSED

LIST OF COUNTIES go to C1

DK1.
Can you remember the name of the body of water where you used your boat?

Can you tell me the name of the closest city where your boat entered the water?

Where.

Have you been boating anywhere else in California between September 1995 through July 1996?

1. YES goto know
2. NO goto c1

V5c.
About how many days did you use your boat in [fill county name]?

If there were twice as many boats on the water, how many days would you go boating in [fill county name] in the upcoming year?

If the boating facilities you used were twice as crowded, how many days would you go boating in [fill county name] in the upcoming year?

Go to V6

V5cdk.
About how many days did you use your boat
on (read body of water)
near (read city name)?

If there were twice as many boats on the water, how many days would you go boating
on (read body of water)
near (read city name)
in the upcoming year?

If the boating facilities you used were twice as crowded, how many days would you go boating
on (read body of water)
near (read city name)
in the upcoming year?

Go to V6

V6. In which counties do you expect to use your boat during the remainder of the boating year August 1996?

0. DON'T KNOW COUNTY NAME goto 6dk
1. BEGIN SELECTING COUNTIES
2. NO TRIPS PLANNED goto END
9. REFUSED

AUG.
About how many days do you plan to use your boat in [fill county name]?
goto END

6DK.
Do you know the name of the body of water where you plan to use your boat?

Can you tell me the name of the city that is closest to where you plan to use your boat?

END. That was my last question. The information you have provided will be very valuable to the State of California's Air Resources Board. Thank you very much for your participation in this survey.

NOBOAT. Unfortunately, for our follow-up interview, we are only interested in how you used this specific boat. Thank you for your time.

APPENDIX B.

1996 BOATING ACTIVITY DAY MATRIX

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA	C.COSTA
ALAMEDA	3.80	-	-	-	-	-	2.23
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	11.00	-	-	-	-
BUTTE	1.79	-	0.53	20.53	-	-	-
CALAVERAS	-	-	-	-	7.50	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	3.87	-	2.63	0.39	0.11	0.45	14.00
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	1.76	-	-	-	-
FRESNO	-	-	-	-	-	-	-
GLENN	-	-	-	23.33	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-	-
MADERA	-	-	-	-	-	-	-
MARIN	0.95	-	-	-	0.21	-	2.84
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-	-
MERCED	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-
MONTEREY	1.09	-	-	-	-	-	-
NAPA	1.14	-	-	-	0.36	-	0.79
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	0.55	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	0.53	-	0.19	0.82	0.24	-	0.19
SANBENITO	-	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	-	-
SANDIEGO	0.27	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-	9.50
SANJOAQUIN	3.56	0.11	1.11	-	2.61	-	0.11
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	0.04	-	-	-	1.25	-	1.43

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA	C.COSTA
SANTABARBARA	-	-	-	0.14	-	-	-
SANTACLARA	3.93	-	-	-	0.11	0.04	3.80
SANTACRUZ	-	-	-	-	0.56	-	0.67
SHASTA	-	-	-	0.25	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	0.47	-	-	-	-	-	3.71
SONOMA	-	-	-	-	-	-	0.38
STANISLAUS	-	0.50	-	-	-	-	-
SUTTER	-	-	-	6.64	-	-	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	-	-	0.12	0.29
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT	IMPERIAL
ALAMEDA	-	-	-	-	-	-
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-
BUTTE	-	-	-	1.21	-	-
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	-	-	-	-	-	-
DELNORTE	70.00	-	-	-	20.00	-
ELDORADO	-	13.41	-	-	-	-
FRESNO	-	-	20.69	-	-	-
GLENN	-	-	-	12.67	-	-
HUMBOLT	-	-	-	-	16.67	-
IMPERIAL	-	-	-	-	-	5.00
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	12.00	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-
LOSANGELES	-	-	0.49	-	0.03	-
MADERA	-	-	2.00	-	-	-
MARIN	-	1.05	-	-	-	-
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	0.13	-
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-
NAPA	-	-	-	-	-	-
NEVADA	-	-	-	-	-	-
ORANGE	0.12	-	0.12	-	-	0.19
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	0.75	-	-	-	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	-	0.13	-	-	0.38
SACRAMENTO	-	0.98	0.68	-	-	-
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	0.25	-
SANDIEGO	-	-	-	-	-	1.27
SANFRANCISCO	-	-	-	-	-	-
SANJOAQUIN	-	0.11	-	-	-	-
SANLUISOBISPO	-	-	0.08	-	-	-
SANMATEO	-	0.18	-	-	0.21	-

	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT	IMPERIAL
SANTABARBARA	-	-	1.93	-	-	-
SANTACLARA	-	0.07	-	-	-	-
SANTACRUZ	-	0.44	-	-	-	-
SHASTA	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	4.17	-
SOLANO	-	-	-	-	-	-
SONOMA	-	4.21	-	0.13	0.29	-
STANISLAUS	-	-	-	-	-	-
SUTTER	-	-	-	1.55	-	-
TEHAMA	-	-	-	0.60	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	2.30	-	-	-
TUOLUMNE	-	-	-	-	-	-
VENTURA	-	-	0.15	-	-	-
YOLO	-	6.00	-	-	-	-
YUBA	-	-	-	-	-	-

	INYO	KERN	KINGS	LAKE	LASSEN	LOS ANGELES	MADERA	MARIN
ALAMEDA	-	-	-	-	-	-	-	0.14
ALPINE	-	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-	-
BUTTE	-	-	-	-	0.21	-	-	-
CALAVERAS	-	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-	-
CONTRACOSTA	-	-	-	5.26	-	-	-	0.24
DELNORTE	-	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	1.18	-	-	-
FRESNO	-	-	-	-	-	-	0.19	-
GLENN	-	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-	-
KERN	0.53	5.76	-	-	-	-	-	-
KINGS	-	-	5.00	-	-	-	-	-
LAKE	-	-	-	9.00	-	-	-	-
LASSEN	-	-	-	-	45.25	-	-	-
LOSANGELES	-	0.41	-	0.18	-	16.34	-	-
MADERA	-	-	-	-	-	-	36.20	-
MARIN	-	-	-	2.42	-	-	-	19.58
MARIPOSA	-	-	-	-	-	-	1.00	-
MENDOCINO	-	-	-	0.50	-	-	-	-
MERCED	-	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-	-
MONO	16.00	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-	-
NAPA	-	-	-	0.43	1.07	-	-	0.14
NEVADA	-	-	-	-	-	-	-	-
ORANGE	0.19	0.65	-	0.06	-	4.08	0.11	-
OUTOFSTATE	-	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-	-
RIVERSIDE	0.50	0.18	-	-	-	0.58	-	-
SACRAMENTO	-	-	-	0.19	0.10	-	-	0.26
SANBENITO	-	-	-	-	-	-	-	-
SANBERNARDINO	-	0.10	-	-	-	2.10	-	-
SANDIEGO	-	0.04	-	-	-	0.79	-	-
SANFRANCISCO	-	-	-	1.75	-	-	-	-
SANJOAQUIN	-	-	-	-	-	-	-	0.44
SANLUISOBISPO	-	-	-	-	-	-	-	-
SANMATEO	-	-	-	3.21	0.21	-	-	1.07

1996 Boating Activity Day Matrix

	INYO	KERN	KINGS	LAKE	LASSEN	LOS ANGELES	MADERA	MARIN
SANTABARBARA	-	0.21	-	-	-	-	-	-
SANTACLARA	-	-	-	0.38	0.09	0.04	-	0.11
SANTACRUZ	-	-	-	0.56	-	-	-	-
SHASTA	-	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-	-
SOLANO	-	-	-	0.82	3.41	-	-	0.12
SONOMA	-	-	-	3.38	-	-	-	5.29
STANISLAUS	-	-	-	-	-	-	-	-
SUTTER	-	-	-	-	-	-	-	-
TEHAMA	-	-	-	-	0.80	-	-	-
TRINITY	-	-	-	-	-	-	-	-
TULARE	-	0.20	-	-	-	0.50	-	-
TUOLUMNE	-	-	-	-	-	-	-	-
VENTURA	-	-	-	0.06	-	5.82	-	0.12
YOLO	-	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-	-

	MARIPOSA	MENDOCINO	MERCED	MODOC	MONO	MONTEREY	NAPA
ALAMEDA	-	-	-	-	-	0.11	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	-	-	-	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	0.42	0.45	-	-	0.11	0.16
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	0.47	-	-	-	-
FRESNO	-	-	0.35	-	-	-	-
GLENN	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	0.35	0.94	-
KINGS	-	-	-	-	-	-	-
LAKE	-	6.20	-	-	-	-	0.20
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	0.49	0.04	-
MADERA	-	-	-	-	-	-	-
MARIN	-	-	0.26	-	-	0.16	2.47
MARIPOSA	1.00	-	-	-	-	-	-
MENDOCINO	-	8.88	-	-	-	0.25	-
MERCED	2.91	-	8.64	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	15.50	-	-
MONTEREY	1.18	-	-	-	-	8.09	-
NAPA	-	-	-	0.50	-	-	4.57
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	0.04	0.06	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	-	0.13	-	-	-	-	-
SANBENITO	-	-	35.00	-	-	-	-
SANBERNARDINO	-	-	-	-	-	0.03	-
SANDIEGO	-	-	-	-	0.25	-	-
SANFRANCISCO	-	-	-	-	-	-	-
SANJOAQUIN	-	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	-	-	-	-	-	-

	MARIPOSA	MENDOCINO	MERCED	MODOC	MONO	MONTEREY	NAPA
SANTABARBARA	-	-	-	-	-	0.71	-
SANTACLARA	-	-	-	-	-	0.04	-
SANTACRUZ	-	-	-	-	-	1.56	-
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	0.50	-	-	-
SOLANO	-	-	-	-	-	-	2.82
SONOMA	-	2.54	-	-	-	-	0.71
STANISLAUS	5.56	-	4.28	-	-	-	-
SUTTER	-	-	-	-	-	-	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	-	-	-	0.50	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	-	0.18	0.79	0.03
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	NEVADA	ORANGE	PLACER	PLUMAS	RIVERSIDE	SACRAMENTO
ALAMEDA	-	-	-	-	-	4.57
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	1.00
BUTTE	-	-	-	1.68	-	-
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	-	-	-	1.68	-	5.24
DELNORTE	-	-	-	-	-	-
ELDORADO	-	-	0.82	-	-	1.65
FRESNO	-	-	-	-	-	-
GLENN	-	-	-	0.67	-	-
HUMBOLT	-	-	-	-	-	-
IMPERIAL	-	1.00	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	-	12.50	-	-
LOSANGELES	-	3.17	0.06	-	0.74	0.04
MADERA	-	-	-	-	-	-
MARIN	-	-	-	-	-	0.05
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	0.13
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	1.00	-	-	-	-
MONTEREY	-	-	-	-	-	0.18
NAPA	-	-	0.43	0.43	-	-
NEVADA	5.58	-	1.75	-	-	0.83
ORANGE	-	16.22	-	-	1.76	0.11
OUTOFSTATE	-	-	-	-	-	-
PLACER	0.60	-	13.00	2.00	-	1.80
PLUMAS	-	-	-	2.50	-	-
RIVERSIDE	-	0.98	-	-	11.33	-
SACRAMENTO	0.45	-	1.44	0.08	-	11.11
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	0.45	0.08	-	4.90	-
SANDIEGO	-	1.14	-	-	0.96	-
SANFRANCISCO	-	-	-	-	-	0.50
SANJOAQUIN	-	-	-	-	-	1.67
SANLUISOBISPO	-	-	-	-	-	0.08
SANMATEO	-	-	-	0.21	-	1.25

	NEVADA	ORANGE	PLACER	PLUMAS	RIVERSIDE	SACRAMENTO
SANTABARBARA	-	-	-	-	0.14	-
SANTACLARA	0.58	-	-	-	-	0.49
SANTACRUZ	-	-	1.11	-	-	5.00
SHASTA	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-
SOLANO	-	-	-	-	-	5.06
SONOMA	0.33	-	0.17	0.42	-	0.08
STANISLAUS	-	-	-	-	-	0.17
SUTTER	11.18	-	0.91	0.82	-	2.00
TEHAMA	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	-	-	-	0.90
TUOLUMNE	-	-	-	-	-	2.00
VENTURA	-	0.71	-	0.15	-	0.26
YOLO	-	-	0.33	-	-	1.56
YUBA	-	-	-	-	-	38.00

	S.BENITO	S.BERNARDINO	S.DIEGO	SANFRANCISCO	S.JOAQUIN
ALAMEDA	-	-	-	1.40	3.51
ALPINE	-		-	-	-
AMADOR	-	-	-	-	-
BUTTE	-	-	-	0.63	-
CALAVERAS	-	-	-	-	-
COLUSA	-	-	-	-	-
CONTRACOSTA	-	-	0.11	0.29	5.45
DELNORTE	-	-	-	-	-
ELDORADO	-	-	-	-	0.82
FRESNO	-	-	-	-	-
GLENN	-	-	-	-	-
HUMBOLT	-	-	-	-	-
IMPERIAL	-	-	11.00	-	-
INYO	-	-	-	-	-
KERN	-	-	-	-	-
KINGS	-	-	-	-	-
LAKE	-	-	-	-	-
LASSEN	-	-	-	-	-
LOSANGELES	0.03	2.05	1.36	-	-
MADERA	-	-	-	-	-
MARIN	-	1.05	0.53	6.00	2.74
MARIPOSA	-	-	-	-	-
MENDOCINO	-	-	-	-	-
MERCED	-	-	-	0.73	1.82
MODOC	-	-	-	-	-
MONO	-	-	4.00	-	-
MONTEREY	-	-	0.36	0.27	-
NAPA	-	-	-	0.79	-
NEVADA	-	-	0.42	-	-
ORANGE	-	1.73	1.67	-	-
OUTOFSTATE	-	-	-	-	-
PLACER	-	-	-	-	0.25
PLUMAS	-	-	-	-	-
RIVERSIDE	-	2.50	4.50	-	-
SACRAMENTO	-	-	-	0.11	2.61
SANBENITO	1.00	-	-	-	-
SANBERNARDINO	0.03	11.88	1.70	-	-
SANDIEGO	-	1.88	24.89	-	-
SANFRANCISCO	-	-	13.50	6.00	2.25
SANJOAQUIN	-	-	-	0.89	14.56
SANLUISOBISPO	-	-	-	-	-
SANMATEO	-	-	-	6.32	2.14

	S.BENITO	S.BERNARDINO	S.DIEGO	SANFRANCISCO	S.JOAQUIN
SANTABARBARA	-	-	-	-	-
SANTACLARA	-	-	0.02	2.91	1.47
SANTACRUZ	-	0.78	-	-	-
SHASTA	-	-	-	-	-
SIERRA	-	-	-	-	-
SISKIYOU	-	-	-	-	-
SOLANO	-	-	-	2.12	1.41
SONOMA	-	-	-	0.38	-
STANISLAUS	-	-	-	-	0.83
SUTTER	-	-	-	-	-
TEHAMA	-	-	-	-	-
TRINITY	-	-	-	-	-
TULARE	-	-	-	-	-
TUOLUMNE	-	-	-	-	0.33
VENTURA	-	0.32	1.15	0.29	-
YOLO	-	-	-	-	-
YUBA	-	-	-	-	10.00

	S.LUISOBISPO	S.MATEO	S.BARBARA	S.CLARA	S.CRUZ	SHASTA
ALAMEDA	-	0.11	-	-	-	0.34
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-
BUTTE	-	-	0.74	-	-	0.11
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	-	0.26	-	-	0.11	0.68
DELNORTE	-	-	-	-	-	-
ELDORADO	-	-	-	-	-	-
FRESNO	-	-	-	-	-	-
GLENN	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	1.50
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	0.30
LASSEN	-	-	-	-	-	- .
LOSANGELES	0.03	-	0.02	-	-	0.09
MADERA	0.40	-	-	-	-	-
MARIN	-	0.26	-	-	-	0.32
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-
MERCED	0.09	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	4.00	-	-	-	-	-
MONTEREY	7.27	-	-	-	0.27	1.09
NAPA	0.29	-	-	-	-	0.43
NEVADA	-	-	-	-	-	-
ORANGE	0.21	-	0.02	-	0.32	0.28
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	-	-	-	-	0.95
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	0.18
SACRAMENTO	-	-	-	-	-	0.15
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	0.18
SANDIEGO	0.16	-	0.04	-	-	-
SANFRANCISCO	-	-	-	-	-	1.25
SANJOAQUIN	-	-	-	-	-	-
SANLUISOBISPO	10.38	-	-	-	-	-
SANMATEO	-	6.61	-	-	-	-

	S.LUISOBISPO	S.MATEO	S.BARBARA	S.CLARA	S.CRUZ	SHASTA
SANTABARBARA	1.50	-	5.64	-	-	-
SANTACLARA	0.02	1.49	-	3.25	0.25	0.07
SANTACRUZ	-	1.11	-	2.89	15.33	0.78
SHASTA	-	-	-	-	-	29.00
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	6.00
SOLANO	-	-	-	-	-	-
SONOMA	-	-	-	-	-	0.21
STANISLAUS	-	-	-	-	-	-
SUTTER	-	-	-	-	-	0.64
TEHAMA	-	-	-	-	-	7.40
TRINITY	-	-	-	-	-	-
TULARE	1.30	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-
VENTURA	0.09	-	1.06	0.12	-	0.15
YOLO	-	-	-	-	-	-
YUBA	-	-	-	-	-	-

	SIERRA	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA
ALAMEDA	-	-	3.23	0.11	0.34	-	0.03
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	1.33	-	-	-	-
BUTTE	-	0.32	-	-	-	-	0.16
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	-	3.05	0.16	0.05	-	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	0.47	-	-	-	-	-	-
FRESNO	-	-	-	-	0.27	-	-
GLENN	-	-	-	-	-	-	3.33
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-	-
MADERA	-	-	-	-	-	-	-
MARIN	-	-	0.16	1.21	0.11	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	1.38	-	-	-
MERCED	-	-	-	-	1.82	-	-
MODOC	-	-	-	-	-	-	#DIV/0!
MONO	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-
NAPA	-	-	4.36	0.29	-	-	-
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	0.50	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	0.21	-	0.42	0.45	0.03	0.08	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	-	1.50	1.25	-	0.50	-
SANJOAQUIN	-	-	-	-	0.83	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	-	1.07	0.21	0.04	-	-

	SIERRA	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA
SANTABARBARA	-	-	-	-	-	-	-
SANTACLARA	-	-	-	-	0.42	-	-
SANTACRUZ	-	-	-	-	-	-	-
SHASTA	-	0.19	-	-	-	-	0.25
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	6.00	-	-	-	-	-
SOLANO	-	-	20.59	0.29	-	-	-
SONOMA	-	0.50	-	8.58	-	-	-
STANISLAUS	-	-	-	-	6.22	-	-
SUTTER	0.45	-	-	-	-	11.00	-
TEHAMA	-	-	-	-	-	-	6.00
TRINITY	-	-	-	-	-	-	-
TULARE	-	2.00	-	-	-	-	-
TUOLUMNE	-	-	1.17	-	-	-	-
VENTURA	-	-	-	-	-	-	-
YOLO	-	-	1.56	-	-	7.78	-
YUBA	-	-	-	-	-	-	-

	TRINITY	TULARE	TUOLUMNE	VENTURA	YOLO	YUBA
ALAMEDA	0.40	-	0.03	-	-	-
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-
BUTTE	-	-	-	1.00	-	0.16
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	0.13	-	-	-	0.11	-
DELNORTE	-	-	-	-	-	-
ELDORADO	-	-	0.71	-	-	-
FRESNO	-	0.65	-	-	-	-
GLENN	-	-	-	-	-	-
HUMBOLT	2.33	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	0.29	-	1.94	-	-
KINGS	-	-	-	-	-	-
LAKE	0.40	-	-	-	-	0.10
LASSEN	-	-	-	-	-	-
LOSANGELES	-	0.04	-	1.23	-	-
MADERA	-	-	-	-	-	-
MARIN	-	-	2.11	-	-	-
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-
MERCED	-	-	0.82	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	-	-	1.36	-	-	-
NAPA	-	-	-	-	-	-
NEVADA	-	-	-	-	-	3.58
ORANGE	-	-	-	0.14	-	-
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-
SACRAMENTO	-	-	0.02	-	2.35	0.13
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-
SANJOAQUIN	-	-	-	-	-	0.39
SANLUISOBISPO	-	-	-	-	-	-
SANMATEO	0.14	-	1.29	-	-	-

	TRINITY	TULARE	TUOLUMNE	VENTURA	YOLO	YUBA
SANTABARBARA	-	-	-	-	-	-
SANTACLARA	-	-	1.42	-	-	-
SANTACRUZ	-	-	-	-	-	-
SHASTA	0.50	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-
SOLANO	-	-	0.18	-	-	-
SONOMA	-	-	-	-	-	0.42
STANISLAUS	-	-	1.89	-	-	-
SUTTER	-	-	-	-	-	8.18
TEHAMA	12.00	-	-	-	-	-
TRINITY	7.00	-	-	-	-	-
TULARE	-	34.70	-	-	-	-
TUOLUMNE	-	-	2.83	-	60.33	-
VENTURA	-	-	-	37.00	-	-
YOLO	-	-	-	-	7.33	10.00
YUBA	-	-	-	-	-	-

APPENDIX C.

OVERCROWDED WATERWAYS ACTIVITY DAY MATRIX

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA
ALAMEDA	3.29	-	-	-	-	-
ALPINE	-	-	-	-	-	-
AMADOR	-	-	6.67	-	-	-
BUTTE	1.58	-	0.26	12.84	-	-
CALAVERAS	-	-	-	-	3.00	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	2.66	-	2.63	0.39	-	0.18
DELNORTE	-	-	-	-	-	-
ELDORADO	-	-	0.71	-	-	-
FRESNO	-	-	-	-	-	-
GLENN	-	-	-	20.00	-	-
HUMBOLT	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-
MADERA	-	-	-	-	-	-
MARIN	0.63	-	-	-	0.21	-
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	0.45	-	-	-	-	-
NAPA	0.07	-	-	-	0.36	-
NEVADA	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	-	-	0.10	-	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-
SACRAMENTO	0.05	-	0.10	0.73	0.03	-
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-
SANJOAQUIN	2.83	-	0.56	-	2.56	-
SANLUISOBISPO	-	-	-	-	-	-
SANMATEO	0.04	-	-	-	0.50	-
SANTABARBARA	-	-	-	0.14	-	-
SANTACLARA	2.89	-	-	-	0.11	-
SANTACRUZ	-	-	-	-	0.56	-

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA
SHASTA	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-
SOLANO	-	-	-	-	-	-
SONOMA	-	-	-	-	-	-
STANISLAUS	-	0.17	-	-	-	-
SUTTER	-	-	-	1.55	-	-
TEHAMA	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-
VENTURA	-	-	-	-	-	0.12
YOLO	-	-	-	-	-	-
YUBA	-	-	-	-	-	-

	CONTRACOSTA	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT
ALAMEDA	1.77	-	-	-	-	-
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-
BUTTE	-	-	-	-	0.32	-
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	7.21	-	-	-	-	-
DELNORTE	-	50.00	-	-	-	-
ELDORADO	-	-	9.12	-	-	-
FRESNO	-	-	-	9.23	-	-
GLENN	-	-	-	-	11.00	-
HUMBOLT	-	-	-	-	-	9.17
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-
LOSANGELES	-	-	-	0.33	-	-
MADERA	-	-	-	1.00	-	-
MARIN	2.11	-	0.89	-	-	-
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	0.13
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-
NAPA	0.71	-	-	-	-	-
NEVADA	-	-	-	-	-	-
ORANGE	-	0.06	-	0.12	-	-
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	-	0.05	-	-	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-
SACRAMENTO	0.15	-	0.74	0.24	-	-
SANBENITO	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	0.13
SANDIEGO	-	-	-	-	-	-
SANFRANCISCO	2.50	-	-	-	-	-
SANJOAQUIN	0.11	-	0.06	-	-	-
SANLUISOBISPO	-	-	-	0.08	-	-
SANMATEO	1.43	-	0.18	-	-	0.21
SANTABARBARA	-	-	-	0.71	-	-
SANTACLARA	2.96	-	-	-	-	-
SANTACRUZ	0.33	-	0.44	-	-	-

	CONTRACOSTA	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT
SHASTA	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	4.16
SOLANO	3.47	-	-	-	-	-
SONOMA	-	-	2.58	-	0.13	0.29
STANISLAUS	-	-	-	-	-	-
SUTTER	-	-	-	-	1.27	-
TEHAMA	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	-	0.50	-	-
TUOLUMNE	-	-	-	-	-	-
VENTURA	0.29	-	-	0.15	-	-
YOLO	-	-	4.67	-	-	-
YUBA	-	-	-	-	-	-

	IMPERIAL	INYO	KERN	KINGS	LAKE	LASSEN	LOSANGELES
ALAMEDA	-	-	-	-	-	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	-	-	0.21	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	-	-	-	3.47	-	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	-	1.18	-
FRESNO	-	-	-	-	-	-	-
GLENN	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	2.60	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	1.71	-	-	-	-
KINGS	-	-	-	4.00	-	-	-
LAKE	-	-	-	-	6.50	-	-
LASSEN	-	-	-	-	-	41.00	-
LOSANGELES	-	-	0.17	-	0.09	-	12.53
MADERA	-	-	-	-	-	-	-
MARIN	-	-	-	-	0.79	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	0.13	-	-
MERCED	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	10.00	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-
NAPA	-	-	-	-	0.29	-	-
NEVADA	-	-	-	-	-	-	-
ORANGE	0.05	0.13	0.59	-	0.06	-	3.47
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	0.38	0.25	0.25	-	-	-	0.25
SACRAMENTO	-	-	-	-	0.11	0.10	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDINO	-	-	0.05	-	-	-	2.48
SANDIEGO	0.98	0.04	0.04	-	-	-	0.61
SANFRANCISCO	-	-	-	-	-	-	-
SANJOAQUIN	-	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	-	-	-	2.14	0.14	-
SANTABARBARA	-	-	0.07	-	-	-	-
SANTACLARA	-	-	-	-	0.27	0.09	0.04
SANTACRUZ	-	-	-	-	0.56	-	-

	IMPERIAL	INYO	KERN	KINGS	LAKE	LASSEN	LOSANGELES
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	0.59	3.41	-
SONOMA	-	-	-	-	1.67	-	-
STANISLAUS	-	-	-	-	-	-	-
SUTTER	-	-	-	-	-	-	-
TEHAMA	-	-	-	-	-	0.80	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	0.10	-	-	-	0.10
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	-	-	-	1.76
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	MADERA	MARIN	MARIPOSA	MENDOCINO	MERCED	MODOC	MONO
ALAMEDA	-	0.14	-	-	-	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	-	-	-	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	0.18	-	0.32	0.24	-	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	0.47	-	-
FRESNO	0.12	-	-	-	0.35	-	-
GLENN	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	4.70	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-	0.40
MADERA	27.00	-	-	-	-	-	-
MARIN	-	12.95	-	-	-	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	5.50	-	-	-
MERCED	-	-	1.36	-	6.36	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	7.50
MONTEREY	-	-	0.36	-	-	-	-
NAPA	-	-	-	-	-	0.50	-
NEVADA	-	-	-	-	-	-	-
ORANGE	0.04	-	-	-	-	-	0.01
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	-	0.19	-	-	-	-	-
SANBENITO	-	-	-	-	7.50	-	-
SANBERNARDINO	-	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-	-
SANJOAQUIN	-	0.06	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	0.54	-	-	-	-	-
SANTABARBARA	-	-	-	-	-	-	-
SANTACLARA	-	0.04	-	-	-	-	-
SANTACRUZ	-	-	-	-	-	-	-

	MADERA	MARIN	MARIPOSA	MENDOCINO	MERCED	MODOC	MONO
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	-	-	-
SONOMA	-	4.83	-	1.88	-	-	-
STANISLAUS	-	-	5.00	-	3.39	-	-
SUTTER	-	-	-	-	-	-	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	0.12	-	-	-	-	0.12
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	MONTEREY	NAPA	NEVADA	ORANGE	PLACER	PLUMAS	RIVERSIDE
ALAMEDA	0.11	-	-	-	-	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	-	-	0.89	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	0.11	0.16	-	-	-	1.68	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	0.35	-	-
FRESNO	-	-	-	-	-	-	-
GLENN	-	-	-	-	-	0.67	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	0.10	-	-	-	-	-
LASSEN	-	-	-	-	-	10.00	-
LOSANGELES	0.04	-	-	2.18	-	-	0.37
MADERA	-	-	-	-	-	-	-
MARIN	0.11	1.05	-	-	-	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-	-
MERCED	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-
MONTEREY	6.64	-	-	-	-	-	-
NAPA	-	3.64	-	-	0.21	0.43	-
NEVADA	-	-	3.25	-	1.25	-	-
ORANGE	-	-	-	12.42	-	-	1.00
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	0.30	-	7.40	1.00	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	0.38	-	-	7.95
SACRAMENTO	-	-	0.16	-	0.55	0.08	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDINO	0.03	-	-	0.28	-	-	3.28
SANDIEGO	-	-	-	0.96	-	-	0.36
SANFRANCISCO	-	-	-	-	-	-	-
SANJOAQUIN	-	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	-	-	-	-	-	-
SANTABARBARA	0.71	-	-	-	-	-	0.14
SANTACLARA	0.02	-	-	-	-	-	-
SANTACRUZ	0.22	-	-	-	1.11	-	-

	MONTEREY	NAPA	NEVADA	ORANGE	PLACER	PLUMAS	RIVERSIDE
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	1.76	-	-	-	-	-
SONOMA	-	0.63	0.33	-	0.17	0.17	-
STANISLAUS	-	-	-	-	-	-	-
SUTTER	-	-	5.91	-	0.91	0.45	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	0.40	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	0.50	0.03	-	0.59	-	0.15	-
YOLO	-	-	-	-	0.33	-	-
YUBA	-	-	-	-	-	-	-

	SACRAMENTO	SANBENITO	SANBERNARDINO	SANDIEGO
ALAMEDA	4.00	-	-	-
ALPINE	-	-	-	-
AMADOR	1.00	-	-	-
BUTTE	-	-	-	-
CALAVERAS	-	-	-	-
COLUSA	-	-	-	-
CONTRACOSTA	2.42	-	-	0.11
DELNORTE	-	-	-	-
ELDORADO	0.94	-	-	-
FRESNO	-	-	-	-
GLENN	-	-	-	-
HUMBOLT	-	-	-	-
IMPERIAL	-	-	-	9.00
INYO	-	-	-	-
KERN	-	-	-	-
KINGS	-	-	-	-
LAKE	-	-	-	-
LASSEN	-	-	-	-
LOSANGELES	-	-	1.19	0.82
MADERA	-	-	-	-
MARIN	0.05	-	1.05	0.53
MARIPOSA	-	-	-	-
MENDOCINO	-	-	-	-
MERCED	-	-	-	-
MODOC	-	-	-	-
MONO	-	-	-	1.50
MONTEREY	0.18	-	-	-
NAPA	-	-	-	-
NEVADA	0.83	-	-	-
ORANGE	0.07	-	0.82	1.31
OUTOFSTATE	-	-	-	-
PLACER	0.70	-	-	-
PLUMAS	-	-	-	-
RIVERSIDE	-	-	0.75	2.70
SACRAMENTO	6.42	-	-	-
SANBENITO	-	0.50	-	-
SANBERNARDINO	-	0.03	5.25	1.20
SANDIEGO	-	-	-	18.20
SANFRANCISCO	-	-	-	6.25
SANJOAQUIN	0.39	-	-	-
SANLUISOBISPO	0.08	-	-	-
SANMATEO	1.11	-	-	-
SANTABARBARA	-	-	-	-
SANTACLARA	0.33	-	-	0.02
SANTACRUZ	3.33	-	5.78	-

	SACRAMENTO	SANBENITO	SANBERNARDINO	SANDIEGO
SHASTA	-	-	-	-
SIERRA	-	-	-	-
SISKIYOU	-	-	-	-
SOLANO	3.29	-	-	-
SONOMA	0.08	-	-	-
STANISLAUS	0.06	-	-	-
SUTTER	0.45	-	-	-
TEHAMA	-	-	-	-
TRINITY	-	-	-	-
TULARE	0.60	-	-	-
TUOLUMNE	1.67	-	-	-
VENTURA	0.03	-	0.21	1.15
YOLO	1.33	-	-	-
YUBA	-	-	-	-

	SANFRANCISCO	SANJOAQUIN	SANLUISOBISPO	SANMATEO
ALAMEDA	1.09	1.80	-	0.09
ALPINE	-	-	-	-
AMADOR	-	-	-	-
BUTTE	0.53	-	-	-
CALAVERAS	-	-	-	-
COLUSA	-	-	-	-
CONTRACOSTA	0.16	3.53	-	0.21
DELNORTE	-	-	-	-
ELDORADO	-	0.53	-	-
FRESNO	-	-	-	-
GLENN	-	-	-	-
HUMBOLT	-	-	-	-
IMPERIAL	-	-	-	-
INYO	-	-	-	-
KERN	-	-	-	-
KINGS	-	-	-	-
LAKE	-	-	-	-
LASSEN	-	-	-	-
LOSANGELES	-	-	0.01	-
MADERA	-	-	-	-
MARIN	4.16	0.74	-	0.16
MARIPOSA	-	-	-	-
MENDOCINO	-	-	-	-
MERCED	0.73	1.82	-	-
MODOC	-	-	-	-
MONO	-	-	2.00	-
MONTEREY	0.18	-	6.55	-
NAPA	0.71	-	0.14	-
NEVADA	-	-	-	-
ORANGE	-	-	0.21	-
OUTOFSTATE	-	-	-	-
PLACER	-	-	-	-
PLUMAS	-	-	-	-
RIVERSIDE	-	-	-	-
SACRAMENTO	0.08	1.73	-	-
SANBENITO	-	-	-	-
SANBERNARDINO	-	-	-	-
SANDIEGO	-	-	0.16	-
SANFRANCISCO	6.00	1.00	-	-
SANJOAQUIN	0.39	6.17	-	-
SANLUISOBISPO	-	-	7.23	-
SANMATEO	3.43	0.50	-	5.93
SANTABARBARA	-	-	0.71	-
SANTACLARA	2.29	0.91	0.02	1.25
SANTACRUZ	-	-	-	0.44

	SANFRANCISCO	SANJOAQUIN	SANLUISOBISPO	SANMATEO
SHASTA	-	-	-	-
SIERRA	-	-	-	-
SISKIYOU	-	-	-	-
SOLANO	1.76	0.71	-	-
SONOMA	0.25	-	-	-
STANISLAUS	-	0.72	-	-
SUTTER	-	-	-	-
TEHAMA	-	-	-	-
TRINITY	-	-	-	-
TULARE	-	-	0.70	-
TUOLUMNE	-	-	-	-
VENTURA	0.29	-	-	-
YOLO	-	-	-	-
YUBA	-	-	-	-

	SANTABARBARA	SANTACLARA	SANTACRUZ	SHASTA	SIERRA
ALAMEDA	-	-	-	0.11	-
ALPINE	-	-	-	-	-
AMADOR	-	-	-	-	-
BUTTE	0.53	-	-	0.11	-
CALAVERAS	-	-	-	-	-
COLUSA	-	-	-	-	-
CONTRACOSTA	-	-	0.11	0.26	-
DELNORTE	-	-	-	-	-
ELDORADO	-	-	-	-	0.12
FRESNO	-	-	-	-	-
GLENN	-	-	-	-	-
HUMBOLT	-	-	-	0.17	-
IMPERIAL	-	-	-	-	-
INYO	-	-	-	-	-
KERN	-	-	-	-	-
KINGS	-	-	-	-	-
LAKE	-	-	-	-	-
LASSEN	-	-	-	-	-
LOSANGELES	-	-	-	-	-
MADERA	-	-	-	-	-
MARIN	-	-	-	0.21	-
MARIPOSA	-	-	-	-	-
MENDOCINO	-	-	-	-	-
MERCED	-	-	-	-	-
MODOC	-	-	-	-	-
MONO	-	-	-	-	-
MONTEREY	-	-	0.27	1.09	-
NAPA	-	-	-	0.43	-
NEVADA	-	-	-	-	-
ORANGE	0.02	-	0.24	0.12	-
OUTOFSTATE	-	-	-	-	-
PLACER	-	-	-	-	0.50
PLUMAS	-	-	-	-	-
RIVERSIDE	-	-	-	0.10	-
SACRAMENTO	-	-	-	0.08	0.16
SANBENITO	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-
SANDIEGO	0.04	-	-	-	-
SANFRANCISCO	-	-	-	-	-
SANJOAQUIN	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-
SANMATEO	-	-	-	-	-
SANTABARBARA	3.79	-	-	-	-
SANTACLARA	-	1.89	0.02	0.07	-
SANTACRUZ	-	1.11	9.78	0.78	-

	SANTABARBARA	SANTACLARA	SANTACRUZ	SHASTA	SIERRA
SHASTA	-	-	-	20.75	-
SIERRA	-	-	-	-	-
SISKIYOU	-	-	-	0.33	-
SOLANO	-	-	-	-	-
SONOMA	-	-	-	0.21	-
STANISLAUS	-	-	-	-	-
SUTTER	-	-	-	0.45	0.45
TEHAMA	-	-	-	6.00	-
TRINITY	-	-	-	-	-
TULARE	-	-	-	-	-
TUOLUMNE	-	-	-	-	-
VENTURA	0.94	0.12	-	-	-
YOLO	-	-	-	-	-
YUBA	-	-	-	-	-

	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA	TRINITY
ALAMEDA	-	2.86	0.23	0.26	-	0.03	0.40
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	0.16	-	-	-	-	0.16	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	2.50	0.13	-	-	-	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	-	-	-
FRESNO	-	-	-	0.27	-	-	-
GLENN	-	-	-	-	-	3.33	-
HUMBOLT	-	-	-	-	-	-	2.33
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	-	-	-	0.20
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-	-
MADERA	-	-	-	-	-	-	-
MARIN	-	0.16	0.32	0.11	-	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	0.88	-	-	-	-
MERCED	-	-	-	0.91	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-
NAPA	-	3.86	0.14	-	-	-	-
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	-	0.32	0.35	0.03	0.06	-	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	0.75	-	-	0.50	-	-
SANJOAQUIN	-	-	-	0.56	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	0.54	0.14	0.04	-	-	-
SANTABARBARA	-	-	-	-	-	-	-
SANTACLARA	-	-	0.02	0.22	-	-	-
SANTACRUZ	-	-	-	-	-	-	-

	SISKIYOU	SOLANO	SONOMA	STANISLAUS	SUTTER	TEHAMA	TRINITY
SHASTA	-	-	-	-	-	0.25	0.38
SIERRA	-	-	-	-	-	-	-
SISKIYOU	1.83	-	-	-	-	-	-
SOLANO	-	15.18	-	-	-	-	-
SONOMA	0.50	-	4.75	-	-	-	-
STANISLAUS	-	-	-	3.89	-	-	-
SUTTER	-	-	-	-	7.09	-	-
TEHAMA	-	-	-	-	-	1.20	6.00
TRINITY	-	-	-	-	-	-	1.50
TULARE	2.00	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	-	-	-	-
YOLO	-	0.78	-	-	6.22	-	-
YUBA	-	-	-	-	-	-	-

	TULARE	TUOLUMNE	VENTURA	YOLO	YUBA
ALAMEDA	-	-	-	-	-
ALPINE	-	-	-	-	-
AMADOR	-	-	-	-	-
BUTTE	-	-	0.53	-	0.16
CALAVERAS	-	-	-	-	-
COLUSA	-	-	-	-	-
CONTRACOSTA	-	-	-	-	-
DELNORTE	-	-	-	-	-
ELDORADO	-	0.59	-	-	-
FRESNO	0.42	-	-	-	-
GLENN	-	-	-	-	-
HUMBOLT	-	-	-	-	-
IMPERIAL	-	-	-	-	-
INYO	-	-	-	-	-
KERN	-	-	-	-	-
KINGS	-	-	-	-	-
LAKE	-	-	-	-	-
LASSEN	-	-	-	-	-
LOSANGELES	0.01	-	0.94	-	-
MADERA	-	-	-	-	-
MARIN	-	2.11	-	-	-
MARIPOSA	-	-	-	-	-
MENDOCINO	-	-	-	-	-
MERCED	-	0.36	-	-	-
MODOC	-	-	-	-	-
MONO	-	-	-	-	-
MONTEREY	-	0.45	-	-	-
NAPA	-	-	-	-	-
NEVADA	-	-	-	-	2.42
ORANGE	-	-	0.14	-	-
OUTOFSTATE	-	-	-	-	-
PLACER	-	-	-	-	-
PLUMAS	-	-	-	-	-
RIVERSIDE	-	-	-	-	-
SACRAMENTO	-	0.02	-	1.87	-
SANBENITO	-	-	-	-	-
SANBERNARDINO	-	-	-	-	-
SANDIEGO	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-
SANJOAQUIN	-	-	-	-	0.39
SANLUISOBISPO	-	-	-	-	-
SANMATEO	-	0.64	-	-	-
SANTABARBARA	-	-	-	-	-
SANTACLARA	-	1.22	-	-	-
SANTACRUZ	-	-	-	-	-

	TULARE	TUOLUMNE	VENTURA	YOLO	YUBA
SHASTA	-	-	-	-	-
SIERRA	-	-	-	-	-
SISKIYOU	-	-	-	-	-
SOLANO	-	0.18	-	-	-
SONOMA	-	-	-	-	-
STANISLAUS	-	1.28	-	-	-
SUTTER	-	-	-	-	6.64
TEHAMA	-	-	-	-	-
TRINITY	-	-	-	-	-
TULARE	24.30	-	-	-	-
TUOLUMNE	-	2.00	-	55.67	-
VENTURA	-	-	33.88	-	-
YOLO	-	-	-	5.44	3.33
YUBA	-	-	-	-	-

APPENDIX D.

OVERCROWDED FACILITIES ACTIVITY DAY MATRIX

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA	CONTRACOSTA
ALAMEDA	3.00	-	-	-	-	-	1.77
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	6.67	-	-	-	-
BUTTE	1.58	-	0.26	12.84	-	-	-
CALAVERAS	-	-	-	-	3.00	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	2.66	-	2.63	0.39	-	0.18	7.21
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	0.59	-	-	-	-
FRESNO	-	-	-	-	-	-	-
GLENN	-	-	-	20.00	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-	-
MADERA	-	-	-	-	-	-	-
MARIN	0.84	-	-	-	0.21	-	1.58
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-	-
MERCED	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-
NAPA	0.07	-	-	-	0.36	-	0.71
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	0.05	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	0.05	-	0.10	0.73	0.03	-	0.15
SANBENITO	-	-	-	-	-	-	-
SANBERNARDIN	-	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-	5.00
SANJUAQUIN	2.83	-	0.56	-	2.56	-	0.11
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	0.14	-	-	-	0.50	-	0.71
SANTABARBARA	-	-	-	0.14	-	-	-
SANTACLARA	2.62	-	-	-	0.11	-	2.96
SANTACRUZ	-	-	-	-	0.56	-	0.33

	ALAMEDA	ALPINE	AMADOR	BUTTE	CALAVERAS	COLUSA	CONTRACOSTA
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	-	-	3.35
SONOMA	-	-	-	-	-	-	-
STANISLAUS	-	0.17	-	-	-	-	-
SUTTER	-	-	-	1.82	-	0.55	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	-	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	-	-	0.12	0.29
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT	IMPERIAL	INYO
ALAMEDA	-	-	-	-	-	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	0.32	-	-	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	-	-	-	-	-	-
DELNORTE	50.00	-	-	-	-	-	-
ELDORADO	-	8.82	-	-	-	-	-
FRESNO	-	-	9.81	-	-	-	-
GLENN	-	-	-	11.00	-	-	-
HUMBOLT	-	-	-	-	8.67	-	-
IMPERIAL	-	-	-	-	-	2.60	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	0.32	-	-	-	-
MADERA	-	-	1.00	-	-	-	-
MARIN	-	0.74	-	-	-	-	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	0.13	-	-
MERCED	-	-	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	10.00
MONTEREY	-	-	-	-	-	-	-
NAPA	-	-	-	-	-	-	-
NEVADA	-	-	-	-	-	-	-
ORANGE	0.06	-	0.12	-	-	0.11	0.19
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	0.05	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	0.38	-
SACRAMENTO	-	0.55	0.16	-	-	-	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDIN	-	-	-	-	0.13	-	-
SANDIEGO	-	-	-	-	-	0.86	0.04
SANFRANCISCO	-	-	-	-	-	-	-
SANJUAQUIN	-	0.06	-	-	-	-	-
SANLUISOBISPO	-	-	0.08	-	-	-	-
SANMATEO	-	0.18	-	-	0.21	-	-
SANTABARBARA	-	-	1.43	-	-	-	-
SANTACLARA	-	-	-	-	-	-	-
SANTACRUZ	-	0.44	-	-	-	-	-

	DELNORTE	ELDORADO	FRESNO	GLENN	HUMBOLT	IMPERIAL	INYO
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	-	-	-
SONOMA	-	2.58	-	0.13	0.29	-	-
STANISLAUS	-	-	-	-	-	-	-
SUTTER	-	-	-	1.27	-	-	-
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	0.50	-	-	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	0.15	-	-	-	-
YOLO	-	4.44	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	KERN	KINGS	LAKE	LASSEN	LOSANGELES	MADERA	MARIN	MARIPOSA
ALAMEDA	-	-	-	-	-	-	0.14	-
ALPINE	-	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-	-
BUTTE	-	-	-	0.21	-	-	-	-
CALAVERAS	-	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-	-
CONTRACOSTA	-	-	4.26	-	-	-	0.18	-
DELNORTE	-	-	-	-	-	-	-	-
ELDORADO	-	-	-	1.18	-	-	-	-
FRESNO	-	-	-	-	-	0.12	-	-
GLENN	-	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-	-
KERN	1.53	-	-	-	-	-	-	-
KINGS	-	4.00	-	-	-	-	-	-
LAKE	-	-	5.70	-	-	-	-	-
LASSEN	-	-	-	34.75	-	-	-	-
LOSANGELES	0.12	-	0.09	-	12.48	-	-	-
MADERA	-	-	-	-	-	27.00	-	-
MARIN	-	-	0.79	-	-	-	12.42	-
MARIPOSA	-	-	-	-	-	-	-	-
MENDOCINO	-	-	0.13	-	-	-	-	-
MERCED	-	-	-	-	-	-	-	1.36
MODOC	-	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	-	-	0.36
NAPA	-	-	0.29	-	-	-	-	-
NEVADA	-	-	-	-	-	-	-	-
ORANGE	0.59	-	0.06	-	3.29	0.04	-	-
OUTOFSTATE	-	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-	-
RIVERSIDE	0.13	-	-	-	0.25	-	-	-
SACRAMENTO	-	-	0.11	0.10	-	-	0.19	-
SANBENITO	-	-	-	-	-	-	-	-
SANBERNARDIN	0.05	-	-	-	2.38	-	-	-
SANDIEGO	0.04	-	-	-	0.48	-	-	-
SANFRANCISCO	-	-	-	-	-	-	-	-
SANJUAQUIN	-	-	-	-	-	-	0.06	-
SANLUISOBISPO	-	-	-	-	-	-	-	-
SANMATEO	-	-	2.14	0.14	-	-	0.54	-
SANTABARBARA	0.07	-	-	-	-	-	-	-
SANTACLARA	-	-	-	0.09	0.04	-	0.04	-
SANTACRUZ	-	-	0.56	-	-	-	-	-

	KERN	KINGS	LAKE	LASSEN	LOSANGELES	MADERA	MARIN	MARIPOSA
SHASTA	-	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-	-
SOLANO	-	-	0.59	3.41	-	-	-	-
SONOMA	-	-	1.67	-	-	-	4.88	-
STANISLAUS	-	-	-	-	-	-	-	5.00
SUTTER	-	-	-	-	-	-	-	-
TEHAMA	-	-	-	0.80	-	-	-	-
TRINITY	-	-	-	-	-	-	-	-
TULARE	0.10	-	-	-	0.10	-	-	-
TUOLUMNE	-	-	-	-	-	-	-	-
VENTURA	-	-	-	-	4.41	-	0.12	-
YOLO	-	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-	-

	MENDOCINO	MERCED	MODOC	MONO	MONTEREY	NAPA	NEVADA
ALAMEDA	-	-	-	-	0.11	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	-	-	-	-	-
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	0.26	0.24	-	-	0.11	0.16	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	0.47	-	-	-	-	-
FRESNO	-	0.35	-	-	-	-	-
GLENN	-	-	-	-	-	-	-
HUMBOLT	-	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	3.70	-	-	-	-	0.10	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	0.37	0.02	-	-
MADERA	-	-	-	-	-	-	-
MARIN	-	-	-	-	0.11	0.79	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	4.50	-	-	-	-	-	-
MERCED	-	5.55	-	-	-	-	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	7.50	-	-	-
MONTEREY	-	-	-	-	6.64	-	-
NAPA	-	-	0.50	-	-	3.64	-
NEVADA	-	-	-	-	-	-	2.00
ORANGE	-	-	-	0.04	-	-	-
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	0.30
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	-	-	-	-	-	-	0.16
SANBENITO	-	7.50	-	-	-	-	-
SANBERNARDIN	-	-	-	-	0.03	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	-	-	-
SANJUAQUIN	-	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	-	-	-	-	-	-	-
SANTABARBARA	-	-	-	-	0.71	-	-
SANTACLARA	-	-	-	-	0.02	-	-
SANTACRUZ	-	-	-	-	0.22	-	-

	MENDOCINO	MERCED	MODOC	MONO	MONTEREY	NAPA	NEVADA
SHASTA	-	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	-	1.59	-
SONOMA	1.67	-	-	-	-	0.63	0.33
STANISLAUS	-	3.39	-	-	-	-	-
SUTTER	-	-	-	-	-	-	5.45
TEHAMA	-	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-	-
TULARE	-	-	-	-	0.40	-	-
TUOLUMNE	-	-	-	-	-	-	-
VENTURA	-	-	-	0.12	0.50	-	-
YOLO	-	-	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	ORANGE	PLACER	PLUMAS	RIVERSIDE	SACRAMENTO	SANBENITO
ALAMEDA	-	-	-	-	4.00	-
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	0.33	-
BUTTE	-	-	1.42	-	-	-
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	-	-	1.68	-	2.87	-
DELNORTE	-	-	-	-	-	-
ELDORADO	-	0.35	-	-	0.94	-
FRESNO	-	-	-	-	-	-
GLENN	-	-	0.67	-	-	-
HUMBOLT	-	-	-	-	-	-
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	10.00	-	-	-
LOSANGELES	2.07	-	-	0.38	-	-
MADERA	-	-	-	-	-	-
MARIN	-	-	-	-	0.05	-
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	-	-	-	-	0.18	-
NAPA	-	0.21	0.43	-	-	-
NEVADA	-	1.25	-	-	0.83	-
ORANGE	12.16	-	-	0.99	0.07	-
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	9.40	1.00	-	0.75	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	0.25	-	-	6.00	-	-
SACRAMENTO	-	0.42	0.08	-	6.10	-
SANBENITO	-	-	-	-	-	1.00
SANBERNARDIN	0.23	-	-	2.78	-	-
SANDIEGO	0.89	-	-	0.36	-	-
SANFRANCISCO	-	-	-	-	0.50	-
SANJUAQUIN	-	-	-	-	0.39	-
SANLUISOBISPO	-	-	-	-	-	-
SANMATEO	-	-	-	-	1.11	-
SANTABARBARA	-	-	-	0.14	-	-
SANTACLARA	-	-	-	-	0.33	-
SANTACRUZ	-	1.11	-	-	3.33	-

	ORANGE	PLACER	PLUMAS	RIVERSIDE	SACRAMENTO	SANBENITO
SHASTA	-	-	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-
SOLANO	-	-	-	-	3.59	-
SONOMA	-	0.17	0.25	-	0.08	-
STANISLAUS	-	-	-	-	0.06	-
SUTTER	-	0.91	0.45	-	0.45	-
TEHAMA	-	-	-	-	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	-	-	0.60	-
TUOLUMNE	-	-	-	-	1.67	-
VENTURA	0.65	-	0.15	-	-	-
YOLO	-	0.33	-	-	1.11	-
YUBA	-	-	-	-	30.00	-

	SANBERNARDINO	SANDIEGO	SANFRANCISCO	SANJUAQUIN
ALAMEDA	-	-	1.09	1.80
ALPINE	-	-	-	-
AMADOR	-	-	-	-
BUTTE	-	-	0.53	-
CALAVERAS	-	-	-	-
COLUSA	-	-	-	-
CONTRACOSTA	-	0.11	0.16	3.53
DELNORTE	-	-	-	-
ELDORADO	-	-	-	0.53
FRESNO	-	-	-	-
GLENN	-	-	-	-
HUMBOLT	-	-	-	-
IMPERIAL	-	9.00	-	-
INYO	-	-	-	-
KERN	-	-	-	-
KINGS	-	-	-	-
LAKE	-	-	-	-
LASSEN	-	-	-	-
LOSANGELES	1.16	0.79	-	-
MADERA	-	-	-	-
MARIN	0.53	0.53	4.16	0.74
MARIPOSA	-	-	-	-
MENDOCINO	-	-	-	-
MERCED	-	-	0.73	1.82
MODOC	-	-	-	-
MONO	-	1.50	-	-
MONTEREY	-	-	0.45	-
NAPA	-	-	0.71	-
NEVADA	-	-	-	-
ORANGE	0.82	1.29	-	-
OUTOFSTATE	-	-	-	-
PLACER	-	-	-	-
PLUMAS	-	-	-	-
RIVERSIDE	0.50	5.45	-	-
SACRAMENTO	-	-	0.06	1.89
SANBENITO	-	-	-	-
SANBERNARDIN	5.13	1.00	-	-
SANDIEGO	-	17.41	-	-
SANFRANCISCO	-	-	6.00	1.50
SANJUAQUIN	-	-	0.39	4.50
SANLUISOBISPO	-	-	-	-
SANMATEO	-	-	2.79	0.50
SANTABARBARA	-	-	-	-
SANTACLARA	-	0.02	2.02	0.91
SANTACRUZ	-	-	-	-

	SANBERNARDINO	SANDIEGO	SANFRANCISCO	SANJUAQUIN
SHASTA	-	-	-	-
SIERRA	-	-	-	-
SISKIYOU	-	-	-	-
SOLANO	-	-	1.76	0.29
SONOMA	-	-	0.25	-
STANISLAUS	-	-	-	0.72
SUTTER	-	-	-	-
TEHAMA	-	-	-	-
TRINITY	-	-	-	-
TULARE	-	-	-	-
TUOLUMNE	-	-	-	-
VENTURA	0.21	1.00	0.29	-
YOLO	-	-	-	-
YUBA	-	-	-	10.00

	SANLUISOBISPO	SANMATEO	SANTABARBARA	SANTACLARA
ALAMEDA	-	0.09	-	-
ALPINE	-	-	-	-
AMADOR	-	-	-	-
BUTTE	-	-	0.53	-
CALAVERAS	-	-	-	-
COLUSA	-	-	-	-
CONTRACOSTA	-	0.21	-	-
DELNORTE	-	-	-	-
ELDORADO	-	-	-	-
FRESNO	-	-	-	-
GLENN	-	-	-	-
HUMBOLT	-	-	-	-
IMPERIAL	-	-	-	-
INYO	-	-	-	-
KERN	-	-	-	-
KINGS	-	-	-	-
LAKE	-	-	-	-
LASSEN	-	-	-	-
LOSANGELES	0.01	-	-	-
MADERA	-	-	-	-
MARIN	-	0.16	-	-
MARIPOSA	-	-	-	-
MENDOCINO	-	-	-	-
MERCED	-	-	-	-
MODOC	-	-	-	-
MONO	2.00	-	-	-
MONTEREY	6.55	-	-	-
NAPA	0.14	-	-	-
NEVADA	-	-	-	-
ORANGE	0.21	-	0.02	-
OUTOFSTATE	-	-	-	-
PLACER	-	-	-	-
PLUMAS	-	-	-	-
RIVERSIDE	-	-	-	-
SACRAMENTO	-	-	-	-
SANBENITO	-	-	-	-
SANBERNARDIN	-	-	-	-
SANDIEGO	0.16	-	0.04	-
SANFRANCISCO	-	-	-	-
SANJUAQUIN	-	-	-	-
SANLUISOBISPO	7.23	-	-	-
SANMATEO	-	5.29	-	-
SANTABARBARA	0.71	-	3.79	-
SANTACLARA	0.02	1.25	-	1.85
SANTACRUZ	-	0.33	-	1.11

	SANLUISOBISPO	SANMATEO	SANTABARBARA	SANTACLARA
SHASTA	-	-	-	-
SIERRA	-	-	-	-
SISKIYOU	-	-	-	-
SOLANO	-	-	-	-
SONOMA	-	-	-	-
STANISLAUS	-	-	-	-
SUTTER	-	-	-	-
TEHAMA	-	-	-	-
TRINITY	-	-	-	-
TULARE	0.70	-	-	-
TUOLUMNE	-	-	-	-
VENTURA	-	-	0.94	0.12
YOLO	-	-	-	-
YUBA	-	-	-	-

	SANTACRUZ	SHASTA	SIERRA	SISKIYOU	SOLANO	SONOMA
ALAMEDA	-	0.11	-	-	2.86	0.23
ALPINE	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-
BUTTE	-	0.11	-	0.16	-	-
CALAVERAS	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-
CONTRACOSTA	0.11	0.18	-	-	2.37	0.13
DELNORTE	-	-	-	-	-	-
ELDORADO	-	-	0.12	-	-	-
FRESNO	-	-	-	-	-	-
GLENN	-	-	-	-	-	-
HUMBOLT	-	0.17	-	-	-	-
IMPERIAL	-	-	-	-	-	-
INYO	-	-	-	-	-	-
KERN	-	-	-	-	-	-
KINGS	-	-	-	-	-	-
LAKE	-	-	-	-	-	-
LASSEN	-	-	-	-	-	-
LOSANGELES	-	-	-	-	-	-
MADERA	-	-	-	-	-	-
MARIN	-	0.21	-	-	0.16	0.32
MARIPOSA	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	0.88
MERCED	-	-	-	-	-	-
MODOC	-	-	-	-	-	-
MONO	-	-	-	-	-	-
MONTEREY	0.27	1.09	-	-	-	-
NAPA	-	0.43	-	-	3.86	0.14
NEVADA	-	-	-	-	-	-
ORANGE	0.24	0.12	-	-	-	-
OUTOFSTATE	-	-	-	-	-	-
PLACER	-	-	0.50	-	-	-
PLUMAS	-	-	-	-	-	-
RIVERSIDE	-	0.10	-	-	-	-
SACRAMENTO	-	0.08	0.16	-	0.32	0.35
SANBENITO	-	-	-	-	-	-
SANBERNARDIN	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-
SANFRANCISCO	-	-	-	-	1.50	-
SANJUAQUIN	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-
SANMATEO	-	-	-	-	0.54	0.14
SANTABARBARA	-	-	-	-	-	-
SANTACLARA	0.02	0.07	-	-	-	-
SANTACRUZ	7.56	0.78	-	-	-	-

	SANTACRUZ	SHASTA	SIERRA	SISKIYOU	SOLANO	SONOMA
SHASTA	-	19.81	-	-	-	-
SIERRA	-	-	-	-	-	-
SISKIYOU	-	0.33	-	1.83	-	-
SOLANO	-	-	-	-	14.29	-
SONOMA	-	0.21	-	0.50	-	5.29
STANISLAUS	-	-	-	-	-	-
SUTTER	-	0.45	0.45	-	-	-
TEHAMA	-	6.00	-	-	-	-
TRINITY	-	-	-	-	-	-
TULARE	-	-	-	2.00	-	-
TUOLUMNE	-	-	-	-	-	-
VENTURA	-	-	-	-	-	-
YOLO	-	-	-	-	0.78	-
YUBA	-	-	-	-	-	-

	STANISLAUS	SUTTER	TEHAMA	TRINITY	TULARE	TUOLUMNE	VENTURA
ALAMEDA	0.26	-	0.03	0.40	-	-	-
ALPINE	-	-	-	-	-	-	-
AMADOR	-	-	-	-	-	-	-
BUTTE	-	-	0.16	-	-	-	0.53
CALAVERAS	-	-	-	-	-	-	-
COLUSA	-	-	-	-	-	-	-
CONTRACOSTA	-	-	-	-	-	-	-
DELNORTE	-	-	-	-	-	-	-
ELDORADO	-	-	-	-	-	0.59	-
FRESNO	-	-	-	-	0.46	-	-
GLENN	-	-	3.33	-	-	-	-
HUMBOLT	-	-	-	2.33	-	-	-
IMPERIAL	-	-	-	-	-	-	-
INYO	-	-	-	-	-	-	-
KERN	-	-	-	-	-	-	-
KINGS	-	-	-	-	-	-	-
LAKE	-	-	-	0.20	-	-	-
LASSEN	-	-	-	-	-	-	-
LOSANGELES	-	-	-	-	0.01	-	0.83
MADERA	-	-	-	-	-	-	-
MARIN	0.11	-	-	-	-	2.11	-
MARIPOSA	-	-	-	-	-	-	-
MENDOCINO	-	-	-	-	-	-	-
MERCED	0.91	-	-	-	-	0.36	-
MODOC	-	-	-	-	-	-	-
MONO	-	-	-	-	-	-	-
MONTEREY	-	-	-	-	-	0.45	-
NAPA	-	-	-	-	-	-	-
NEVADA	-	-	-	-	-	-	-
ORANGE	-	-	-	-	-	-	0.14
OUTOFSTATE	-	-	-	-	-	-	-
PLACER	-	-	-	-	-	-	-
PLUMAS	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-
SACRAMENTO	0.03	0.06	-	-	-	0.02	-
SANBENITO	-	-	-	-	-	-	-
SANBERNARDIN	-	-	-	-	-	-	-
SANDIEGO	-	-	-	-	-	-	-
SANFRANCISCO	-	0.50	-	-	-	-	-
SANJUAQUIN	0.56	-	-	-	-	-	-
SANLUISOBISPO	-	-	-	-	-	-	-
SANMATEO	0.04	-	-	-	-	0.64	-
SANTABARBARA	-	-	-	-	-	-	-
SANTACLARA	0.22	-	-	-	-	1.22	-
SANTACRUZ	-	-	-	-	-	-	-

	STANISLAUS	SUTTER	TEHAMA	TRINITY	TULARE	TUOLUMNE	VENTURA
SHASTA	-	-	0.25	0.38	-	-	-
SIERRA	-	-	-	-	-	-	-
SISKIYOU	-	-	-	-	-	-	-
SOLANO	-	-	-	-	-	0.18	-
SONOMA	-	-	-	-	-	-	-
STANISLAUS	3.89	-	-	-	-	1.28	-
SUTTER	-	7.09	-	-	-	-	-
TEHAMA	-	-	1.20	6.00	-	-	-
TRINITY	-	-	-	1.50	-	-	-
TULARE	-	-	-	-	18.30	-	-
TUOLUMNE	-	-	-	-	-	2.00	-
VENTURA	-	-	-	-	-	-	31.53
YOLO	-	6.22	-	-	-	-	-
YUBA	-	-	-	-	-	-	-

	YOLO	YUBA
ALAMEDA	-	-
ALPINE	-	-
AMADOR	-	-
BUTTE	-	0.16
CALAVERAS	-	-
COLUSA	-	-
CONTRACOSTA	-	-
DELNORTE	-	-
ELDORADO	-	-
FRESNO	-	-
GLENN	-	-
HUMBOLT	-	-
IMPERIAL	-	-
INYO	-	-
KERN	-	-
KINGS	-	-
LAKE	-	-
LASSEN	-	-
LOSANGELES	-	-
MADERA	-	-
MARIN	-	-
MARIPOSA	-	-
MENDOCINO	-	-
MERCED	-	-
MODOC	-	-
MONO	-	-
MONTEREY	-	-
NAPA	-	-
NEVADA	-	2.50
ORANGE	-	-
OUTOFSTATE	-	-
PLACER	-	-
PLUMAS	-	-
RIVERSIDE	-	-
SACRAMENTO	1.71	-
SANBENITO	-	-
SANBERNARDIN	-	-
SANDIEGO	-	-
SANFRANCISCO	-	-
SANJUAQUIN	-	0.39
SANLUISOBISPO	-	-
SANMATEO	-	-
SANTABARBARA	-	-
SANTACLARA	-	-
SANTACRUZ	-	-

	YOLO	YUBA
SHASTA	-	-
SIERRA	-	-
SISKIYOU	-	-
SOLANO	-	-
SONOMA	-	-
STANISLAUS	-	-
SUTTER	-	6.64
TEHAMA	-	-
TRINITY	-	-
TULARE	-	-
TUOLUMNE	55.67	-
VENTURA	-	-
YOLO	5.33	3.33
YUBA	-	-

APPENDIX E.

DATA SOURCES FOR BOAT REGISTRATION FORECASTS

Appendix E. **Data Sources For Boat Registration Forecasts**

Population: 1981-1990: California Department of Finance, Report 90 E-4, Population Estimates for California Cities and Counties, 1981-1990 (www.dof.ca.gov)

1991-1996: California Department of Finance Report, 96 E-4, Population Estimates for California Cities and Counties, 1990-1996 (www.dof.ca.gov)

2000, 2010, 2020: California Department of Finance, Report 93 P-1, Population Projections by Race/Ethnicity for California and Its Counties: 1990-2040 (www.dof.ca.gov)

2005, 2015: Midpoint calculation of California Department of Finance data 2000, 2010, 2020

Income: 1981-1984: California Department of Finance, Personal Income Summary, pg. 3 (faxed directly from California Department of Finance)

1985-1994: California Department of Finance, Table D-6, Personal Income By County, 1985 to 1994 (www.dof.ca.gov)

1995, 1996, 2000-2020: Regression analysis (time = ind. var. with 1981=1, 2020=40)

Boat Registration:

1981-1996: DMV Vessel Registrations by County 2000-2020: Regression Analysis

Boating Conditions:

PRI survey
(Waterways Twice As Crowded)
(Boating Facilities Twice As Crowded)

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